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THE COST OF FINANCING THE NATIONALISED INDUSTRIES[1]

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The expected rate of profit on investment used by the nationalised industries, their ' planning rate of interest,' appears to be much lower than those used in the private sector. As far as it is possible to judge from evidence before the Select Committee on the Nationalised Industries it is hardly above the cost of their finance: that is from 4 to 5½ per cent;[2] whereas in the private sector it is generally said to be from 10 to 20 per cent.[3] Can we argue that the nationalised industries ought to use a higher planning rate of interest because the private sector does? No. The discrepancy can be explained in any or all of four ways.

But first there is one type of explanation which would be implausible. The discrepancy cannot be explained reasonably by a difference in the productivity of entrepreneurship in private and in the nationalised industries, if we define entrepreneurship to mean the skills of management, co-ordination and supervision, excluding risk-bearing from the definition, because of the usual divorce between this function and the provision of capital. We find normally that the difference in entrepreneurship required is shewn in salaries paid and not in the rate of profit.

By contrast the discrepancy can be explained more plausibly by (1) a difference in risk. In a world of perfect competition without perfect foresight and where profits were not defined to include the rewards of entrepreneurial ability, this would have to be the explanation of such a discrepancy. It might be that a reported expected rate of profit of from 10 to 20 per cent, used in the past and present, neglects the memory of those firms which have been dissolved in bankruptcy. In the public sector the trees in the forest are never cut down and sold up. In the private sector some are. But even if it were the case that all firms in the private sector expected to realise a rate of profit of from 10 to 20 per cent, the difference between it and the rate used by the nationalised industries might still measure a difference in risk whether or not justified by events. It is usually said that the forecasting of demand for the products of the nationalised industries is easier than for those of most private industry. Insofar as this generalisation holds, we should not be surprised to find some discrepancy between the two rates of profit in a world of perfect competition or in our own world.

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[1] This question has been discussed recently by Sir Roy Harrod, *Policy Against Inflation* (1957), pp. 186–95, 236–40; R. Kelf-Cohen, *Nationalisation in Britain* (1958), ch. 10, pp. 281, 291, 293, 4; and by D. L. Munby, ' Finance of the Nationalised Industries,' in THE BULLETIN OF THE OXFORD INSTITUTE OF STATISTICS (May, 1959), pp. 73–84.

[2] D. L. Munby, *op. cit.*, p. 75. But the evidence given to Select Committee on the investment policy of the Ministry of Transport in respect of aircraft seems to suggest that there the planning rate of interest is higher though still less than one which would be used commercially. [*Report of the Select Committee* on the Air Corporations (May, 1959), Q. 45]. To judge by the actual rate of profit of the Iron and Steel Corporation in 1952 which was 17 per cent the iron and steel industry when nationalised used a planning rate of interest comparable with those used in the private sector. [*Monopolies and Restrictive Practices Commission: Report on Certain Industrial and Medical Gases* (December, 1956), para. 224]. These were the exceptions.

[3] Cf. S. P. Chambers, ' Investment and Britain's Industrial Future ', *The Listener*, 24 January, 1957; and P. T. Menzies, in *The National Provincial Bank Review*, August, 1957, for an assessment of the expected rate of profit used in the private sector.

(2) But in this imperfect world we can give other types of explanation. Let us assume for the moment that nationalised industries do maximise their profits, or more plausibly and interestingly, that even if they were to maximise them there would still be a discrepancy. Then if there were no difference in risk it would have to be argued that the higher rate of profit expected in private industry was caused by the higher degree of monopoly which existed there.

I believe it is not right to dismiss this type of explanation of the discrepancy as implausible. The widely held belief that the demand for the products of the nationalised industries is price-inelastic may be an historical survival; as is the belief that the British are good losers. We have thought of the nationalised industries for so long as public monopolies that we are unwilling to admit the possibility that they are as vulnerable to competition as is much of private industry.[1] We have here a situation where the concept of an industry is not helpful. The substitutes for the products of the nationalised industries are more often than not produced by what we think of as other industries; and not by firms in the same industry. But although road and rail; oil, coal, gas and electricity are *imperfect* substitutes principally but not wholly because there is often a cost of changing over from one form of transport or fuel to another, the degree of imperfection is not greater than through much of the private sector. The use of the railways is sensitive to changes in fares and freight charges. The demand for coal is sensitive to changes in price particularly in an upward direction; and there is no reason to suppose that electricity and gas in most of their uses have much unexploited monopoly power. Any considerable change in their tariffs would lead to their displacement by oil and perhaps even by coal. Therefore it seems reasonable to conclude that even if we were to suppose the nationalised industries to differentiate their products and discriminate in other ways to increase their monopoly power, it is probable that the degree of monopoly they could achieve would be less than that to be found in the bulk of private industry.

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[1] Note the curious distinction made by Mr. A. T. K. Grant before the Select Committee when speaking of the difference between the air corporations and the other nationalised industries. 'There is that great difference because these air corporations are different to other nationalised industries in that they are subject to strict competition, unlike roads displacing railways, or oil displacing coal, or electricity displacing gas, but straight competition between competitors internationally and indeed with outside operators in this country as well,' *op. cit.* Q. 63.

(3) If there were no differences in the entrepreneurial skill, risk or the degree of market imperfection, we could explain the discrepancy as a result of the nationalised industries' policy of not maximising profits. The discrepancy would then be a measure of the nationalised industries' restraint, imposed in many cases by Act of Parliament. It would be the cost incurred by average-cost pricing, unremunerative services, and other failures to take any or all the advantage of the imperfections of the market.

So we reach a conclusion that the discrepancy can be explained by any or most reasonably as the effect of the operation of all of them: differences in risk, the degree of monopoly and the tendency to maximise profits, given the degree of monopoly.[1] If we wish to criticise the nationalised industries' planning rate of interest we can only do it by considering these causes. We can argue that the valuation of risk is mistaken if it is based on objective statistical evidence; or that it is over-optimistic where subjective. Or we could if we wanted, argue for some quasi-Keynesian policy to ' socialise ' or otherwise equalise risk. We could discuss the desirable degree of monopoly and the practicability of anti-monopoly legislation; and we could consider, failing equalisation there, which is the better of two policies: to try to charge a ' fair ' price in an imperfect world or to be as ' distorted ' as the rest of them.

There is however another direction from which we can argue that the expected rate of profit is too low among the nationalised industries without referring to the discrepancy between their rates of profit and any others. The general principle is that we can argue that they do not pay enough for one or more factors of production. The particular instance is that the cost of finance to them is too low.

In recent years the nationalised industries and public corporations have found finance as follows:

Capital Account of Nationalised Industries and other Public Corporations, 1951–58

	1953	*1954*	*1955*	*1956*	*1957*	*1958*
Receipts:						
Undistributed income before providing for depreciation and stock appreciation	176	209	180	197	173	175
Additions to tax and interest reserves and capital transfers (net receipts)	24	—1	—5	24	8	2
Loans from Central Government (net)	38	100	142	267	604	573
Stock issued for cash less stock redeemed	219	205	367	21	—2	—1
Increase in bank loans and overdrafts outstanding	—55	70	—96	81	—36	2
Total Receipts	402	583	588	590	747	751

Source: Radcliffe Committee's Report, para. 89.

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[1] There is yet another cause which can account for discrepancies of up to 2 or 3 per cent between rates of expected profit quoted. Profits are not always defined in the same manner. (i) The rate of profit is sometimes but not always gross of a special inflation allowance for depreciation over and above depreciation allowed on a historical costs basis. (I am grateful to Mr. G. D. N. Worswick for pointing this out to me), cf. S. P. Chambers, *loc. cit.*; *Report on Certain Industrial and Medical Gases*, Appendix E. (ii) Before the profits tax was simplified the nationalised industries had to make a smaller provision *pro rata* for profits tax as they were taxed at the undistributed rate on all their profits, cf. *Royal Commission on Taxation of Profits and Income*: Final Report (June 1955), paras. 565–7.

Between 23 and 44 per cent of capital expenditure in various years has been self-financed. The nationalised industries and public corporations have borrowed their short-term funds from the banking system. What is more interesting is that there has been an important change in the pattern of long-term finance. Before 1956 the nationalised industries borrowed long by issues of stock (except the National Coal Board which has always borrowed directly from the Treasury.) But even before 1956 this source of funds was inadequate. The Bank of England was often unable to place a large part of a nationalised industry's issue on the market. Then the Issue Department took up that unsubscribed proportion and it was financed by sales of Treasury Bills. By the beginning of 1956 the placing of stock had become more difficult and in the budget it was announced that the nationalised industries would in future not sell stock but would borrow directly from the Treasury for their long-term requirements. To cover this the Treasury would borrow short on Treasury Bills.

This is the present pattern. How can it be criticised? In general the nationalised industries have been able at all times to borrow more cheaply than private industry; but there are great differences in the prices that commercial firms have to pay for capital depending on their size, reputation and other factors. Why should it not be accepted that the nationalised industries are able to borrow cheaply because of their size, reputation and for other commercial reasons?

The argument is that they are able to borrow at that price not because of their own merits; but because of certain services performed for them by the government and nation. The government guarantees the interest payment and the capital repayment of their borrowings. This is why they are able to borrow from the banks at ½ per cent less than the most credit-worthy commercial borrowers. Similarly all holders of nationalised industries' stock and of Treasury Bills have the same guarantee. The government gives the nationalised industries' liabilities those qualities which make them attractive to a certain class of lender. And this service performed by the government is not costless.

What follows is a classification of the types of cost incurred by the central government in servicing the nationalised industries' debt. The argument is that there are four types of cost not included in the price which they pay for funds; and there is no obvious reason why they should not themselves pay a price which does cover these costs; unless it is decided that subsidies should be given to them in this way. The four types of cost proceed from the less to the more important.

(1) When a firm, an institution or a local authority issues stock in the market it ordinarily pays one or more underwriters a commission to place and underwrite the issue. They are paid first for services given in advertising and administering the issue; and secondly to compensate them for the risk of having to take up that proportion of the issue, if any, which is not subscribed for by the public. Both elements in the charge will tend to vary in the same

direction for the same types of firms, institutions and local authorities. The smaller the issue the greater the advertising and administration costs and also the greater the risk of undersubscription from the public. Although it is not always the case the larger the firm the smaller the commission the underwriters charge. The actual commission varies greatly. The usual commission for a good quality market stock is about 3 to 8 per cent of the value of the issue.

The government used to pay about 1 per cent commission on its issues. Once upon a time the smallness of the commission reflected the greater ease of placing government debt. No British government would have placed an issue unless it were confident of a market for it. But since the war, the placing of government and nationalised industries' issues has become more difficult, because of inflation, business prosperity and greater competition in the money market. It is not likely that a private syndicate of underwriters would now charge so low a commission if they had effectively to underwrite the issue as well as advertise and administer it. But in fact they do not have to do this. As the Radcliffe Committee has pointed out the Bank of England is the underwriter for the government and nationalised industries.[1] What happens is that all government issues are declared to be subscribed in full; but this is an announcement which hides the truth and which has been strongly criticised by the Committee. What actually happens is that the Bank of England underwrites the issue and takes up the stock for which the public has not subscribed.

This underwriting service is one for which any private firm would have to pay, and it is not obvious why the nationalised industries, if they ever return to borrowing by issue of stock, should have this advantage at the taxpayers' expense. A similar advantage is involved in borrowing from the government against Treasury Bills. There is a cost of servicing this debt which is not borne by the nationalised industries; and for which other borrowers in the short-term money market—firms institutions and local authorities—have to pay the brokers who find them their funds.

Let us call the *actual* interest charges the nationalised industries pay for their funds, A; and the *real* interest charges which would cover the costs of the nationalised industries, borrowing and allow for the risks involved, on the same amount of borrowing, R. This first stage in the argument amounts to the proposition that R exceeds A by an amount we shall call w: the cost of servicing and underwriting insofar as this borne by the government and not by the nationalised industries.

(2) There is another cost which the government incurs because of the existence of the nationalised industries' debt. In 1951 the debt of the nationalised industries was roughly 9 per cent of total government debt; in 1958 it was 12 per cent. But whatever proportion it was or is, unless we suppose that the demand for government liabilities is infinitely elastic, we must agree that the government's readiness to finance the nationalised industries by the

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[1] *Report of the Committee on the Working of the Monetary System* (August, 1959), paras. 108–115, 337–8.

issue of government or government-guaranteed debt has caused a rise in the rate of interest on government bonds and bills above what it would otherwise be. This is not a straightforward case of an increase in the demand for a certain type of loanable funds leading to a rise in the rate of interest. It is the government that makes it possible for the nationalised industries to borrow as it does. This means that the government is itself responsible for the higher rate of interest it has to pay on its debt from this cause. Unless once more there is a given reason why the nationalised industries should be subsidised in this manner, there is a cost they should pay which can be defined in theory much more easily than it can be guessed at in practice. This cost x, represents the difference between two amounts of interest payments.

(i) The amount of interest actually paid by the government on its own debt (excluding interest paid by the nationalised industries on their debt); when it is allowing the nationalised industries to borrow in the same market by guaranteeing interest and capital which makes their liabilities perfect substitutes for its own.

(ii) The amount of interest which would be paid by the government if the nationalised industries were not able to borrow under government guarantee. The assumption is that the liabilities of the nationalised industries would become considerably less perfect substitutes for government debt; and would become closer substitutes for industrial debentures and equities. Therefore unless the elasticity of demand for government debt is infinite, the rate of interest paid by the government would be less.

(3) The third cost or risk of cost borne by the government on account of the nationalised industries is the cost or risk of the cost of deficit. As we have seen it is the government that is liable to pay when any nationalised industry is unable to meet its costs, including the cost of paying interest and redeeming maturing stock. If the nationalised industries were as riskless as the kind of liability they incur to the market suggests that they ought to be, then the government would not be gambling when it makes its guarantee.

There are however two kinds of risk which should be considered separately.

(i) *Demand risk.* There is the risk that there will be a deficit because of a fall in the demand for the products of nationalised industries which was not anticipated. We can say here that some deficit would be incurred even if the nationalised industry were free to vary its prices at will. This would seem to be the broad character of the National Coal Board's recent deficits and the deficits of the Air Corporations. Insofar as the central government is guaranteeing the nationalised industries against this risk without charging them for it, it makes a present of the premium required to insure against this risk. (Only the Gas Council is required to set aside a special fund to provide for deficit and to repay the government when the government has to meet such a deficit because the fund is not at the time sufficient.[1])

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[1] Idris Hicks, ' Finance of the Gas Industry ', *Public Administration* (1958), 162.

(ii) *Risk from price control.* There is a special kind of risk which it might be argued the nationalised industries should not bear. This is the risk which comes from price control: when judicial or political organs of the government do not allow a nationalised industry to raise prices to cover an increase in costs. The most noteworthy examples of this in the past have been in transport. But there have been difficulties of this sort also in the fuel industries where advisory councils and ministries have put formal and informal pressure on them not to increase prices.

It is clear that this particular risk is an occupational hazard of the nationalised industries. The question is whether this should be borne by the government or by the industries themselves. That the government should bear it seems at first the stronger argument. It is because of some decision of the government in a judicial or political capacity that the nationalised industries have to stand these losses. But against this there is the argument that if the government does stand these losses this leads to unfair discrimination between the nationalised industries and their private rivals. For example a decision of a transport authority not to allow an increase in fares may not only cause a deficit in the accounts of a publicly owned bus company but also in those of a private company whose losses are not met by the exchequer. A wise private firm makes some allowance for price inflexibility where appropriate, as for other forms of government intervention which may diminish its profits.

It is this second argument that the nationalised industries do not have to allow for this risk while private industry does, rather than the first argument that the government is responsible for this dislocation as for many others, which makes me feel that they should pay for their capital or themselves bear the risk.

(i) Either they should pay a margin of y, let us call it, over and above the cost of borrowing to the government which in the opinion of the government's advisers would provide sufficient cover for the risk of a deficit.

(ii) Or the government should require the nationalised industries to provide this margin by using a planning rate of interest which is sufficient, in the government's opinion, to cover the risk and so ensure the return on the government's capital.

So far we have argued that the nationalised industries should pay $(w+x+y)$ more for their finance if the government bears all these costs as yet mentioned; but that they should pay only $(w+x)$ more if they themselves take on this third cost to the government's satisfaction. It still seems to me plausible that even if they paid the rate of interest which covered these costs, the nationalised industries might find it cheaper to borrow with a government guarantee than on the free market. But this seems less sure when we consider the fourth cost.

(4) If it were not for monetary policy we would expect the government always to wish to borrow at the lowest possible rate of interest to minimise interest charges; but monetary policy can cause the rate of interest to vary. This is the cost of monetary policy. Let us first consider the

nature of the cost on the assumption that the nationalised industries are financed by the issue of long-term stock. If monetary policy is to be effective the long term rate of interest will rise as the government reduces the money supply by open market operations. The measure of the cost of this which can be imputed to the nationalised industries is the difference in the interest-elasticity of demand of government stock when it is and when it is not swelled by nationalised industries' long-term borrowings or by any comparable stocks issued by anyone else. The presumption is that the existence of nationalised industries' stocks makes it necessary to let bond prices fall lower to achieve a given reduction in the money supply; and therefore means a heavier burden of interest changes consequent on the use of monetary policy than would otherwise be the case.

What has happened is that the government has not used open market operations to make monetary policy effective. The Radcliffe Committee recognises the strength of the government's case given the volume of government debt. If monetary policy is to be effective through a reduction in the money supply, the government has to sell longs on a falling market. Not only is this in itself a costly operation; but it also will make it more difficult to place government debt in the future because of the expectation that debt holders have of greater constancy in the price of government longs. But insofar as the government is a net borrower and that makes it too costly for it to pursue open market operations and this is a result of the nationalised industries' borrowing, the nationalised industries should pay the interest charges for which they are responsible. Again it is a cost incurred for them. If the monetary policy were to be effective and the nationalised industries were to borrow on government guarantee, then the government would bear the additional cost. If the monetary policy is ineffective, then the nation bears the cost. The theory of this cost is that it is the difference between the monetary policy and the non-monetary policy rates of growth of income. If monetary policy is worth using then it is to be presumed that the monetary policy rate of growth is higher on average than the rate of growth which would be achieved without the use of monetary policy. (Alternatively some may put forward either of the curious dogmas that inflations or balance-of-payments disequilibria are to be avoided, are a cost per se and not ultimately because of their effect on the rate of growth. Or it can be argued reasonably that a more stable monetary-policy rate of growth can be preferred to a relatively unstable non-monetary-policy rate of growth even if the latter is higher on average. It can also be argued that a monetary-policy rate of growth can be preferred to a non-monetary rate of growth even if the latter is higher on average, when the former is associated with a higher level of employment. But what is material to our argument is that in all cases there is a social cost arising if monetary policy is foregone though it will be defined differently according to the purpose for which it is intended.)

The same point can be made more forcibly in respect of Treasury Bills. Let us consider the cost here in terms of two policies.

(i) First let us assume what matters is the *liquidity ratio* and the liquidity of the banking system. The correct policy in a credit squeeze is to reduce the number of Treasury Bills in existence so that the banks are forced to contract their assets to restore liquidity. But in the past the government has been unable to contract the volume of Treasury Bills to this end because of its financial needs and the needs of the nationalised industries. If monetary policy is to be effective in this direction, either the government must reduce its spending as it reduces its borrowing; or it must previously have held an unspent balance financed by issuing Treasury Bills. Then it would be able to reduce the number of Treasury Bills without cutting its own expenditure. What has often been said is that the authorities have been unable to reduce the volume of Treasury Bills because of the capital needs of the nationalised industries. If this is so then this is a cost incurred by the government and nation on account of the nationalised industries. We can say in this case that if the nationalised industries do borrow against Treasury Bills, then they should be prepared to run the risk any other short-term borrower runs of being unable suddenly to renew finance from the same source.

(ii) Secondly let us imagine another policy. This would be meant not to work so much on the banks' liquidity position as on the supply of money by open market operations at the short end of the market. The policy requires that the banks' liquidity should be reduced by raising the liquidity ratio in a credit squeeze at the same time as the number of Treasury Bills is increased to reduce the money supply. Here again the existence of the nationalised industries' debt leads to a cost borne by the government, if monetary policy is made effective, and by the nation if it is not. If this is the policy pursued then the nationalised industries can take the risk of a reduction in borrowing in a credit squeeze. Then they need not pay the additional cost which we will now call z. Or if they want their source of funds guaranteed, they should pay z which is the measure of the difference in the fall in the price of Treasury Bills required to achieve the contraction in the money supply which is a result of the nationalised industries' borrowing against Treasury Bills.

Our equation now reads:

$$R=A+w+x+y$$
$$\text{or } R=A+x+y+z$$

w and z are alternatives: w applies when the government does not propose to use monetary policy, z when it does.

Of these costs we have argued that y could reasonably be avoided by the nationalised industries if they raised their planning rate of interest sufficiently to cover the risk of a deficit. We have argued that if the nationalised industries borrow long on government guarantee z is a cost which they should not escape. But if they borrow short it depends upon which of two policies is pursued. If the aim is to reduce the number of Treasury Bills in circulation then the *cost* to the nationalised industries should be that they should be forced to go elsewhere for some of their finance in a credit squeeze; otherwise the government's intentions will be defeated. But if the second policy is pursued which entails raising the liquidity ratios and increasing the volume of Treasury Bills, then the nationalised industries can either pay z which is the interest cost; or they must be ready to go elsewhere for their capital requirements in a credit squeeze.

At that price some or all of the nationalised industries and public corporations might find it cheaper to raise funds in other ways. Let us consider briefly the most likely alternative methods.

(1) *Self-financing.* Sir Roy Harrod has suggested they should raise their prices so as to be able to meet their capital requirements from profits.[1] Mr. Munby has pointed out the magnitude of the price changes which would be needed. If as Harrod has argued the nationalised industries are relieved of the obligation of paying interest charges on capital borrowed in the past, 15–20 per cent price rises would be required for English and Welsh electricity; 35-40 per cent for Scottish electricity; 5 per cent for coal; perhaps 5 per cent for gas, and perhaps 10 per cent for transport.[2] But the strongest argument against making the nationalised industries finance themselves is not the magnitude of the price changes implied, but the probable impossibility of effecting this without reducing the volume of investment below what is *profitable.* What is meant by this? Some firms are fortunate enough to be able to finance all their capital requirements out of undistributed profits. Other firms are growing too rapidly for this to be possible. They have to borrow some of their funds from the market and high rate of expected profit on investment in them makes this possible. To assume that the nationalised industries are able to finance their capital needs internally if they raise prices, it must be assumed as Harrod appears to assume and Munby assumes explicitly that the demand for their products is highly inelastic. (Munby makes the ' rough and ready assumption of an inelastic demand '). As I have argued earlier in this article this seems to me to be dubious. It may well be the case that if the nationalised industries were required to finance themselves from profits, that this would mean a cut in the volume of their investment below what was profitable as the market judges profitability.

(2) *Issuing stock on the market without a Treasury Guarantee.* What makes it unlikely that the nationalised industries could raise money by the issue of *debentures* is the relative unprofitability of the nationalised industries. But this is only on the supposition that the nationalised industries do not raise their planning rates of interest and consequently reduce their rates of investment. If they do there is almost certainly some rate of investment which is profitable when financed by money raised by issues of stock without a Treasury Guarantee. (If the fiction of public ownership is to be maintained this must be by debenture.)

The crux of the matter is this. Either the nationalised industries do or do not pay at market rates for their funds. If they do not they are either able to borrow from the government at a subsidised rate (A); or they can finance themselves from internal resources. In either case it will be possible for them to go on investing using planning rates of interest lower than those used in the private sector. If they continue to borrow at a subsidised rate (A), they can maintain the present volume of investment and expected rate of profit. But if they rely on self-finance they can only do this on the assumption that prices can be raised sufficiently to maintain the present volume of investment and rate of expected profit; without having to use a planning rate of interest as high as they would have to use if they went to the market for their funds.

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[1] *op. cit.*, p. 238.

[2] *op. cit.*, p. 78.

But if they go to the market for funds they will have to raise their planning rates of interest and consequently reduce the volume of investment so as to be able to pay the market rates of interest; unless once again the inelasticity of demand for their products is such that they can raise prices and the planning rate of interest without reducing the volume of investment.

It may be decided that in the interest of maintaining lower prices, preserving a lower degree of monopoly in the public corporations sector or for other reasons, the present policy of subsidising the nationalised industries by giving them finance on a rate of interest which does not reflect the true costs to the government of their borrowings should be continued. But this classification of the costs involved should give a clearer indication of the nature of the subsidy:

w: the cost of servicing and underwriting.

x: the additional cost of financing the National Debt which can be imputed to the existence of the nationalised industries' debt when guaranteed by the Treasury.

y: the cost borne because of the risk of deficit.

z: the additional cost of monetary policy for which the existence of government-guaranteed nationalised industries' debt is responsible, perhaps amounting to the defeat of monetary policy.

The Magnitude of these Costs

It is not my purpose in this paper to attempt to measure these costs. Such an attempt would make the paper too long: in particular the measurement of x and z involves complicated calculation. But it is proper that some indication should be given of how these costs could be assessed to demonstrate that the argument of this paper is meant to be a practical contribution to the problem of financing the nationalised and not just a theoretical abstraction.

(1) The magnitude of w can probably best be hazarded by an underwriter in the new issue market. The calculation he would have to make would be one to decide first what risk there was of some part of an issue of nationalised industries' stock not being taken up by the public; and secondly what commission he needed to insure himself against that risk. Clearly this will depend upon the prospects of the nationalised industry concerned and what need not be the same, the public's evaluation of those prospects.

(2) To estimate the magnitude of x the two relevant elasticities must be hazarded: (i) the elasticity of demand for government debt when the liabilities

of the nationalised industries are not guaranteed by the government and are therefore not perfect substitutes for it; (ii) the elasticity of demand for government debt when the debt of the nationalised industries is a perfect substitute for it. None could imagine that these elasticities can be computed exactly; but a rough calculation would give some measure of the burden borne by the government.

(3) y could be measured for any given nationalised industry on the basis of the occurrence and size of past deficits and profits which were less than anticipated. This would give an objective criterion of the risk involved. But clearly this would be modified if future prospects were better or worse than they had been in the past.

(4) The estimation of z is the most difficult, doubtful and important of the four. If the government ever decides that monetary policy as at present employed is not efficient enough, it will be of the first importance that some calculation of the cost of monetary policy using open market operations should be made. (The cost will of course vary depending upon the nature of the policy: how far it operates on the short and on the long end of the market: how far the cost is transferred from government to others by the imposition of liquidity and cash ratios, etc.). It is conceivable that the cost of monetary policy might be greater than the benefit derived: meaning by this that the cost would lower the average monetary policy rate of growth below the average non-monetary policy rate of growth (though this fact in itself would not necessarily justify the abandonment of monetary policy). It is more probable that it will not. But the cost of monetary policy is something we need to guess at intelligently. The estimation of the cost of monetary policy involves estimating the elasticity of demand for government debt with and without the use of monetary policy. The estimation of z implies the calculation of another elasticity: the elasticity of demand for government debt if the debt of the nationalised industries were not guaranteed by the government.

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INTERNATIONAL COMPARISON OF BUILDING COSTS WITH PARTICULAR REFERENCE TO U.S.A. AND GREAT BRITAIN[1]

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Introduction

The problem of comparing national productivity levels is rather more difficult than has sometimes been assumed by analysts working in this field in the past. Overall comparisons of building costs in two different countries tend to be misleading because of national differences in the end products, in the proportions in which the various sorts of buildings are produced and in the complex of prices for labour and materials. Price data suitable for making international comparisons are difficult to obtain; the difficulty increases with the amount of detail required. A reasonable amount of price information has been obtained for America, and this has made it possible to test out how far institutional differences account for the differences in overall building prices. This paper provides a description of the price comparisons that can be made between different types of buildings within the two countries, and between the prices of labour and material.

Building Prices in U.S.A.

Regional differences are, of course, more important in a country as large and diverse as U.S.A. than in smaller countries such as Great Britain, and any cost and price data relating to such a country as a whole must be interpreted with particular caution. An American organisation has compiled a price list broadly representative of all types of buildings and of the country as a whole, and this provides a convenient starting point for comparing the costs of buildings between the two countries. The prices given are final prices for the buildings themselves, and exclude the cost of land, landscaping, roads and professional fees.[2]

Private housing in the U.S.A. can be divided into houses with a framed construction and those with load bearing masonry walls. Both types of construction are used for one and two-storey dwellings although the information available suggests that most of the framed buildings are single-storey. The most usual type of house is, of course, the single storeyed framed building. The frame is of timber and is usually clad externally with weatherboard or shingles, or with a brick veneer. Fibreboard, gypsum lath and plaster and other similar prefabricated linings are used for the inner skin of the external walls and partitions. Roofs are usually covered with felt tiles. Prices for the single-storey timber framed buildings are around $11 per sq. ft. for the structure and finishes; the services costing an additional $2.7 per sq. ft. The prices for single-storey dwellings with a brick or stone veneer are about $1.7 more. The available information suggests that prices range about 2 dollars either side of these figures depending on the standard of construction and finish, the standards tending to rise with size. The masonry houses are of similar standards but gypsum lath and plaster, or gysum board generally replaces fibre, or hardboard. The partitions appear to be wood framed as are the floors, and again the roofs are usually covered with felt tiles. The costs of single-storey masonry houses are around $12.3 per sq. ft. for structure and finishes, and $15 complete. For two-storey masonry houses the costs are around $11.7 and $14.0 respectively, with a range of around $3 on either side of these figures (Table 1). The cost of the services which works out at about 20 per cent is not dissimilar from the cost in Great Britain when flues, back boiler and other items necessary for traditional heating are included.

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[1] Crown Copyright Reserved. This paper forms part of the programme of research of the Building Research Board, and appears by permission of the Director of Building Research.

[2] Building Costs Manual, Joint Committee on Building Costs of the Chicago Chapter of the American Institute of Architects and the Appraisers Division of the Chicago Real Estate Board—John Wiley (New York) 1957.

TABLE I

Prices of Private Housing in U.S.A.

Type of House	*Structure and Finish $ per sq. ft.*	*Total including Services $ per sq. ft.*	*Number of Examples*
Wood Frame Single Storey			
(a) Timber Clad	11.1	13.7	9
(b) Brick Veneer	12.8	15.4	8
Masonry			
(a) Single-Storey	12.3	14.9	7
(b) Two-Storey	11.7	14.0	7

In comparing these figures with those for this country it must be remembered that the method of measurement adopted in the U.S.A. is different from that used in Great Britain. In U.S.A. areas are measured to the outside of the perimeter walls and include all useful space—basements and garages are included as well as the normal living areas, only the crawl spaces and attic space with less than 5 ft. of headroom being ignored. In this country, areas are calculated to the inside of the perimeter walls and for this reason alone the areas computed according to the American method are likely to be about 10 per cent greater than they would be on the basis of the English method. As a result, American prices per sq. ft. are likely to be understated by about 10 per cent. In the private housing for which costs are given in this paper, at least a small basement appears to be usual, this area sometimes being divided up into a number of rooms. Garages are also usual and are included in the area. Deep foundations are necessary, at least in the north, and whether or not advantage is taken of these to provide a basement, they will tend to make this type of housing more expensive than if it were constructed as in this country with shallower foundations. While the standards of private housing for which data are given are in certain respects lower than in this country, whole house heating is usual and there is usually a greater provision of plumbing facilities than in this country.

The average prices for American two storey masonry public housing, including services, are rather lower than for similar private housing, being about $10.5 per sq. ft. as against $14 (Table II). When correction is made for differences in the method of measurement these figures become $11.6 and $15.4. The incidence of garages and basements is probably less in public housing than in private housing but the standards in public housing appear to be lower. Plastering appears to be completely eliminated; even concrete blocks are painted direct. Ceiling heights are limited to 7 ft. 10 in.

Low private flatted buildings of two to four-storey construction built in load bearing masonry appear to be cheaper than private two-storey housing even although they appear, from the descriptions,[1] to be of about the same standards. They appear to cost around $10, with a range of about 1.5 either side as against an average of $13 for two-storey houses of load bearing masonry, both figures including cost of services. It is difficult to account for this order of difference. The cost impact of basements should be less in the case of flatted blocks, but on the other hand, the descriptions suggest that the standards of private high flatted framed blocks are probably lower than for private housing, walls and ceilings frequently being left unplastered. Private flatted blocks of five storeys and more which usually have a concrete frame appear to be about 25 per cent more expensive than the lower blocks in load bearing masonry. This actual difference is not dissimilar from the ratio found in this country between four storeys blocks and, say, nine storey blocks.

For public flatted blocks of five or more storeys with a concrete frame, the cost per sq. ft. with services comes out at the same as for two-storey public housing. This of course has to be compared not against the 25 per cent increase of nine-storey over four-storey flatted blocks but against the rather greater cost for private houses as distinct from private high flatted blocks. The difference in the pattern of costs in public and private housing can presumably be explained in terms of standards and in terms of the incidence of basements and garages. Again the figures must of course be corrected for methods of measurement (Table II).

TABLE II

The Price of Private and Public Housing in U.S.A.

Type of Housing	*Price including Services*	*Adjusted Price allowing for method of measurement**
	$ per sq. ft.	$ per sq. ft.
Private Housing		
2-storey Load Bearing Houses	14.0	15.4
2-4 storey Flats, Load Bearing Masonry ...	10.0	11.0
5-storey and above Flats, Concrete Frames	12.5	13.8
Public Housing		
2-storey Houses Load Bearing Masonry ...	10.5	11.6
5 and above storey Flats, Concrete Frames	10.5	11.6

* The prices have been increased by 10 per cent to make them comparable with prices based on method of measurement in this country.

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[1] Building Costs Manual, Joint Committee on Building Costs of the Chicago Chapter of the American Institute of Architects and the Appraisers Division of the Chicago Real Estate Board—John Wiley (New York) 1957.

Price data are also available for a range of other building types, although the number of quotations and the constructional detail are less than for housing. The prices per sq. ft. are summarised in Table III. The problem of basements again occurs in the case of retail shops where fully fitted basements are quite usual. It also appears likely that there are more architectural features and more elaborate finishes in the steel framed shops than in those with load bearing masonry walls. The difference in prices between one-storey offices with load bearing walls and with steel frames is small compared with the corresponding difference for retail shops. It is notable that offices of load bearing masonry construction are nearly twice as expensive as retail shops of similar construction. High framed office blocks of six to ten storeys are about 25 per cent more expensive than the single-storey blocks, a similar increase to that of framed high flatted blocks over low flatted blocks of load bearing masonry. The lowest costs are obtained for one-storey factories and warehouses, reflecting again the lower work content per sq. ft. of such buildings. The prices of this sort of building do not vary very much with the form of construction, tilt-up concrete and masonry being a little cheaper than average and concrete and steel frame a little more expensive. The costs of one and two-storey schools are rather similar to the costs of private two-storey housing. Medical centres, as would be expected, tend to be expensive. It would be rather hazardous to try to adjust the figures for differences in standards or for the method of measurement, but this of course is less material in the case of the larger buildings than for housing.

TABLE III

Prices of Non-Residential Buildings in U.S.A.

Type of Building	*Price per sq. ft.*
	$
One-storey Retail Shops Masonry Construction	8.8
,, ,, ,, Steel frame	11.5
One-storey Offices Masonry Construction	16.2
,, ,, Steel frame	16.8
Framed 6-10 storey Offices	21.0
One-storey Factories and Warehouses	7.0
One and two-storey Schools	13.0
Medical Centres	18.0

Currency Exchange Rates

The obvious difficulty in comparing American prices with those in this country is in choosing a dollar sterling rate at which to convert American prices. The official international exchange rate does not, of course, reflect the comparative costs within the two countries. It merely reflects the rate at which dollars are offered against sterling, directly or indirectly, and is thus influenced by the comparative prices of goods and services entering into international exchange, the movement of capital, and the speculative and Governmental exchange rate influences. In fact, there are innumerable exchange rates varying with the type of product whose price relationships it is desired to compare. For example, in 1950 whereas the official exchange rate was \$1 = 7.1 shillings, for the economy as a whole it was 4.4 shillings, for household goods 7.4 shillings, and for public transport 2.8 shillings.[1] For construction as a whole it was put at 3.8 shillings, the figure for residential buildings being 2.6 shillings and for other construction 6.2 shillings.[1] There is therefore an appropriate dollar sterling exchange rate for each sector of the economy. This problem can be avoided if instead of converting American prices into their British equivalents, the American prices are compared directly with British ones to give the dollar-sterling equivalent, which can then itself be used as an indicator of the comparative price relationships for the various classes. For example the comparative prices per square foot of American and British public two-storey masonry housing is \$11.6 and 33s. respectively giving a dollar-sterling conversion rate of about \$1 = 3s.

The amount of information available about each building type is very limited, and it is not possible to find any reasonably comparable buildings in this country the prices of which can be set against the American ones. Moreover, there is no comprehensive set of prices for different types of buildings available in this country such as compiled by the American organisation mentioned earlier. The comparable British prices which have been set against the American figures have therefore been compiled from a number of sources, the figures for public housing and flats probably being the most reliable. The figures for non-residential buildings have been based on a sample of prices obtained from various published sources. The American and British figures have been set out in Table IV and against them have been put the resulting dollar-sterling cost equivalents. These have been expressed to the nearest shilling in order to reflect the inevitable margins of error in such figures.

While the interpretation of these results is clearly rather hazardous, it is interesting to arrange the types of buildings by the order of their dollar-sterling equivalents and to try to find some reason for this particular relationship. Broadly the dollar-sterling equivalents fall into five building types—two-storey housing and low office blocks having dollar-sterling equivalent of 3s., medical centres 4s., high public multi-storey housing and office blocks, retail shops and schools 5s., high private multi-storey housing 6s., and factories 7s. (Table V).

It will be noticed that with the exception of single-storey factories and warehouses the dollar-sterling equivalents for all the building types are below the international exchange rate of about 7s. per dollar. It is difficult to find any clear-cut common characteristics between the various building groups as arranged by their dollar–sterling equivalents but it would appear that a not untenable thesis could be built up on the relationships of the costs between site labour and materials and the cost ratio of skilled to unskilled site labour. Both these ratios appear to fall as the value of the dollar, in terms of sterling,

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[1] An International Comparison of National Products and the Purchasing Power of Currencies—Gilbert and Kravis, O.E.E.C. 1954.

TABLE IV

Types of Building and Dollar-Sterling Cost Equivalents

Type of Building	*Price in U.S.A.*[1]	*Price in Great Britain*	*Dollar-Sterling Cost Equivalents $1=x shillings*
	$		
Private Housing			
Two-storey Houses Load Bearing Masonry ...	15.4	45/–	3/–
Two-four Storey Flats Load Bearing Masonry	11.0	55/–	5/–
Five and upwards Storey Flats, Concrete Frames	13.8	88/–	6/–
Public Housing			
Two-storey Houses Load Bearing Masonry ...	11.6	33/–	3/–
Five and upwards Storey Flats, Concrete Frames	11.6	57/–	5/–
Non-Residential Buildings			
Retail Shops One-storey Load Bearing Masonry	8.8	47/–	5/–
One-storey Offices Load Bearing Masonry ...	16.2	47/–	3/–
Six-ten storey Offices Framed...	21.0	108/–	5/–
One-storey Factories and Warehouses ...	7.0	50/–	7/–
One and two-storey Schools	13.0	70/–	5/–
Medical Centres	18.0	74/–	4/–

[1] The costs for housing have been adjusted by 10 per cent as in Table II.

TABLE V

Building Types arranged in Ascending Order of their Dollar-Sterling Cost Equivalents

Type of Building	*Dollar-Sterling Cost Equivalents*
Two-storey Private Housing	3/–
Two-storey Public Housing	3/–
Low Office Blocks	3/–
Medical Centres	4/–
Two to four storey private flats, load bearing masonry	4/–
High Multi-storey Public Housing	5/–
High Multi-storey Office Blocks	5/–
Retail Shops	5/–
Schools	5/–
Private five and upwards storey framed flats... ...	6/–
Factories	7/–

rises. As will be shown later, this thesis is not incompatible with the price pattern for materials and various classes of labour.

These figures, which are broadly applicable to 1956–57, compare reasonably with those given by Gilbert in his second book[1] for 1955. His dollar-sterling cost equivalent for residential buildings was 3.0 shillings per dollar, for other construction 6.6 shillings per dollar, and for all construction 5.1 shillings per dollar. He obtained his figures on the basis of rates for measured work, weighted by the importance of the units in that field of activity. The rates for residential buildings were based on small brick or stone houses, but he noted that the particular pattern of weights was not of importance.

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[1] Comparison of Comparative National Products and Price Levels—Gilbert and Associates, O.E.E.C. Cf. also A Comparison of National Output and Productivity, Page, D. and Bombach, G., O.E.E.C., 1959.

TABLE VI

Relative Levels of Gross Wage Rates in U.S.A., 1956–57[1]

Trade	*Dollars per hour*	*Percentage of Labourers' Rate*
Plasterers	3.9	170
Bricklayers and Masons	3.7	160
Plumbers and Glaziers	3.5	150
Carpenters and Joiners	3.2	140
Slaters and Tilers	3.2	140
Electricians	3.2	140
Other Craftsmen	3.2	140
Painters	3.0	130
Labourers	2.3	100

[1] Source. Engineering News Record and Bureau of Labour Statistics.

TABLE VII

Earnings per hour U.S.A. 1956–57 on and off the Site by Type of Product

Type of Product	*On Site*	*Off Site*
	$	$
Lumber and Wood Products excluding Furniture	3.2	1.9
Stone, Clay and Glass Products	3.7	2.1
Heating Apparatus, Non-Electric	3.5	2.2
Sanitary Ware and Plumbers' Supplies...	3.5	2.3
Structural Steel	3.2	2.3
Metal Windows, and other prefabricated metal components...	3.2	2.2
Lighting Fixtures	3.2	2.1

Costs of Labour

The wage structure in the American building industry differs in several ways from that in this country. Whereas here the skilled rates are only 10 per cent greater than the unskilled rates, in America they are about 50 per cent greater. The percentage differences depend on the type of skill and on the locality. It is difficult to find typical figures because of the wide and varying range of skills listed by the numerous districts into which America is divided. Some idea of the national pattern in 1956–57 is given in Table VI.

The second notable feature about the pattern of labour rates in the U.S.A. is that the skilled worker on the site has an advantage over workers in other industries similar to his advantage over the unskilled building worker. It is interesting to compare the earnings of skilled building workers with those of workers on the same type of material in factory and extractive industries. These are given in Table VII and it will be seen that broadly the skilled building operative is paid about 50 per cent more than people working on a corresponding product in the manufacturing or extractive industry. This means that broadly labour costs on the site are up to 50 per cent greater than labour costs off the site so that there is obviously a strong incentive towards off site prefabrication. While it is difficult to obtain comparative figures for this country, it would appear that off-site earnings will be as high as, or higher than, on site earnings.

TABLE VIII

Dollar-Sterling Labour Cost Equivalents, 1956–57

Type of Labour	*U.S.A.*	*Great Britain*	*Dollar-Sterling Cost Equivalents*
	$	shillings	shillings
Site Labour			
Plasterers	3.9	4.8	1.2
Bricklayers and Masons	3.7		1.3
Plumbers and Glaziers	3.5		1.4
Painters	3.0		1.6
Other Craftsmen	3.2		1.5
Labourers	2.3	4.3	1.9
Off-Site Labour			
Average	2.3	4.6	2.0

Dollar-Sterling Labour Cost Equivalent

It is clear that American labour costs are very high compared with those in this country. A comparison can be made by means of dollar-sterling equivalent costs, as in the case of building prices. Such a comparison in terms of skilled site labour suggests that the dollar is worth generally something under 1s. 6d., whereas for unskilled site labour and for off-site labour the equivalent of the dollar is about 2s. (Table VIII). Thus the dollar-sterling equivalents for the various types of buildings are high compared with the dollar-sterling equivalent on labour. The dollar-sterling equivalent in 1955 for consumers' goods was estimated to be about 5s. so that, in general, skilled labour has something over three times more purchasing power in America than here, unskilled and off-site labour having about 2½ times the purchasing power.

Cost of Materials

The prices of building materials and components in America and in this country can be compared through their dollar-sterling equivalents in the same way as buildings and labour, but the range for building materials is far greater than for either. At the one extreme, common bricks have a dollar-sterling equivalent of only 2.8 shillings while at the other, oak has an equivalent of 16.7 shillings. The materials and components given in Table IX are arranged in ascending order of the dollar-sterling equivalents and broadly cover the range of materials and components. It will be noticed that compared with this country, clay products are very expensive in America, whereas timber, and sand and gravel are very cheap. Amongst the other items, cement and cement products and prefabricated materials such as gypsum wallboard, tend to be about average (Table IX).

It is obvious that with such a wide range of dollar-sterling equivalents, the equivalents appropriate to the group of building materials necessary for any particular class of work will vary considerably. Taking materials and components for the industry as a whole, in the proportions used in this country, an equivalent of around 6.0 shillings per dollar is obtained. For

TABLE IX

Comparative Prices of Building Materials, and Dollar-Sterling Equivalents, 1955

Material	*Quantity*	*Price in U.S.A.*	*Price in Great Britain*	*Dollar-Sterling Equivalents*
		$	£	Shillings
Common Bricks	1000 (English standard)	49.2	5.65	2.8
Glazed Tiles	yard super	4.9	0.93	3.8
Facing Bricks	1000 (English standard)	72.7	11.85	3.9
Metal Windows	1 unit	21.1	4.90	4.6
Concrete Building Blocks ...	yard super	1.8	0.43	4.8
Porcelain Bath	1 unit	55.1	15.35	5.6
Asbestos Cement Sheets	yard super	1.0	0.29	5.8
Cement	ton	17.2	5.08	5.9
Copper Tube	℔	0.8	0.24	6.0
Sheet Glass...	foot super	0.1	0.03	6.0
Door (standard flush)	1 unit	6.2	2.00	6.5
Aluminium Sheet	℔	0.4	0.14	7.0
Vitreous China W.C.	one unit	18.5	6.50	7.0
Vitreous China lavatory basin ...	one unit			
Hydrated Lime	ton	16.3	5.88	7.2
Insulation Board	100 sq. ft.	5.6	2.13	7.6
Steel Angles and Tees	ton	109.0	43.25	7.9
Gypsum Wallboard	yard super	0.3	0.12	8.0
Fireclay Sink	1 unit	16.5	7.19	8.7
Gloss Paint...	gallon	5.6	2.50	8.9
Softwood	standard	237.1	110.17	9.3
Sand and Gravel	cubic yard	1.7	1.16	13.6
Oak	cubic foot	2.4	2.00	16.7

load bearing masonry houses the dollar-sterling equivalent appears to be about 5s. 6d., being a little less if American proportions are used, and a little more for English ones. For typical American timber framed houses the dollar-sterling equivalent is rather higher reaching nearly 7s. The equivalents for the materials used for high flats as normally built in this country are probably not greatly different from those for two-storey housing. The equivalents can be raised if it is assumed that the construction dispenses with masonry construction and uses concrete products and other prefabricated materials. It is not difficult to imagine circumstances in which a dollar-sterling cost equivalent of 7s. could be obtained. The dollar-sterling equivalents will tend to increase with a greater use of materials having high dollar-sterling equivalents such as sand, gravel and timber, and to a lesser extent, cement, and with a smaller use of the materials with low dollar-sterling cost equivalents such as clay products. For buildings containing, for instance, very large proportions of concrete and timber, to the exclusion of clay products, dollar cost equivalents of 9s. or 10s. can easily be obtained.

The Relationships between Labour and Materials

As has been shown earlier, the dollar-sterling cost equivalents for labour are very low, the highest, for unskilled labour and off-site labour, being about 2s. As the proportion of skilled labour grows, the cost equivalent falls to about 1s. 6d. On the other hand, as described above, the dollar-sterling cost equivalents of materials range from around 2s. up to about 17s., and it is clear that the dollar-sterling cost equivalent which can be built up for different classes of building from a consideration of the comparative costs of labour and materials will vary very considerably according to the form of construction which is used.

According to the information available[1] for traditional load bearing masonry houses in America, labour costs account for about 43 per cent and material costs 57 per cent of total costs. If these figures were used this would suggest a dollar-sterling exchange rate for housing of this type of about 4s. As against this a figure of 3s. was obtained by comparing the prices of American houses with those in this country. It is difficult to reconcile this difference with the general view of teams visiting America that productivity there is higher than in this country. Indeed this type of difference emphasises the inherent difficulties of such international comparisons.

While there is no available information coucerning the materials/labour ratios for American high flatted blocks, sterling-dollar equivalents similar to those obtained by comparing the prices of American buildings with those in this country can be obtained by adjusting the English materials/labour proportions to allow for the expected greater use of prefabricated construction.

In a similar way it is possible to reproduce the dollar-sterling equivalents obtained by examining the prices of buildings of other types without distorting too much the sort of labour/materials proportions which would be expected. Such an exercise is, however, not very profitable since quite apart from the obvious and inevitable inaccuracies in making the comparisons for labour, materials and buildings, so little is known about the likely effect of levels of productivity in the two countries and perhaps, more important, the effect of differences in specifications and measurements of the buildings under consideration.

Conclusions

It is clear from the above analysis that it is necessary to make price comparisons separately for each type of building; no precise meaning can be given to an overall price comparison since this depends as much on the proportions in which different building types are constructed as on the actual prices for each building type. The analysis further demonstrates that differences in the price relationships for labour and materials in the two countries can account for any differences in building prices between the two countries as effectively as can differences in productivity. It is, however, quite impossible to determine to what extent differences in the price ratios of labour and materials, or differences in productivity are responsible for the actual price relationships. The relative effect of the two different types of variables could only be determined if there were available accurate information as to the exact way in which different sorts of labour and materials were combined in constructing the various types of building in each country. Moreover, while there is evidence to suggest that the final products differ considerably from one country to another, there is a lack of information as to the way in which these differences are likely to affect building prices. It is therefore, concluded that where institutional and product differences are likely to be large, as in international comparisons of building prices, no reliable conclusions on levels of productivity can be obtained by an examination of price and cost data. It would appear that satisfactory comparisons of productivity under these conditions can only be made by a direct technical examination of the types of building, and by a direct physical examination of the labour and materials consumed in their construction.

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[1] A Comparison of National Output and Productivity, D. Paige and G. Bombach, O.E.E.C., 1959 and American Housing, Colean, M.L. 20th Century Fund, New York, 1944.

SAVING, CAPITAL GAIN AND COMPOSITION OF PERSONAL WEALTH IN COPENHAGEN IN 1949[1]

By KJELD BJERKE

Introduction

The purpose of this survey is to illustrate the distribution of net saving and capital gain in various income and social status groups in the calendar year 1949 from a sample of Copenhagen property tax payers, and to examine the composition of personal wealth at the end of this period.

The selection of the calendar year 1949 (tax year 1950–1) for the survey was prompted by the observation that this year might be considered the first fairly normal year since World War II, whilst the devaluation of the krone did not make itself felt until 1950.

The sample chosen is the same as the one used by the Copenhagen Statistical Office in its tax and income statistics: it covers 54 taxation districts, representing approximately 10 per cent of all Copenhagen tax payers (about 44,000 persons) and has been drawn in such a way as to be representative of the income distribution. The Copenhagen tax Authorities assisted in procuring the necessary information and also took part in the investigation and solution of the special problems of taxation technique that naturally arose in the course of planning the survey.

Fifteen per cent of the sample coverage was devoted to property tax payers owning assets of less than kr. 40,000, so that of *all Copenhagen property owners in this class about* 1.5 *per cent have been selected.* (In practice this was achieved by selecting 9 of the 54 taxation districts, and including *all* property owners with assets of less than kr. 40,000 in these nine districts).

As a comparatively small number of persons own a relatively large part of total personal wealth, a greater weight has been assigned to the large properties in the survey. All property owners with assets of kr. 40,000 and over in the sample have been included so that *the survey covers* 10 *per cent of all large properties.*

The material was ' grossed up ' to cover all persons having a positive property at the end of the survey period. Persons with zero property or a negative property on December 31st, 1948, but a positive property on December 31st, 1949, are consequently covered by the survey.

Basic information concerning the two groups of property owners covered by the survey was collected from the registers of tax-payers for the tax years 1949–50 and 1950–51, and the Copenhagen tax authorities entered the following data from the tax returns:

Composition of the property at the two dates—real property—business assets (fixtures, fittings, machinery, stocks, etc.)—bank deposits—savings securities—other assets—mortgage and other debts. As there was no general land tax assessment in 1949 capital gain in connection with real property occurs only in exceptional cases.

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[1] The author would like to express his gratitude to the members of the special committee which entrusted the conduct of this survey to him: Professors F. Zeuthen (Chairman), Carl Iversen, and Winding Pedersen, all of Copenhagen University, and Mr. J. Toftegård, Director of the ' Bikuben ' Savings Bank, which paid the costs of collecting the material; and to Mr. Michael Artis of Oxford University Institute of Statistics who helped to prepare the material for publication.

Capital gains and losses in 1949

Information relating to capital gain and loss was obtainable in respect of the following:

Rise–fall in the market value of securities.

Inheritance.

Gifts, received or given.

Receipt of insurance amounts, purchase of life annuity.

Sale and purchase of real property at prices in excess of assessed value.

The Authorities also provided information concerning provisions made in the course of the year for depreciation in respect of various assets.[1]

Definitions

By net saving we have understood, in this survey the increase or decrease in personal wealth corresponding to the difference between income and consumption expenditure, where income is defined to exclude capital gain or loss.

Capital gain (*or loss*) thus comprises all other movements in capital. It includes all payments of insurance amounts and purchases of life annuities, whereas insurance premia are not included under net saving.

Since the survey was based on a partial sample the error to which this technique is subject must be borne in mind when interpreting the data derived from it.

Net Saving and Capital Gain

By way of introduction it should be pointed out that since the survey refers exclusively to the year 1949, no conclusion can be drawn about the trend of net savings and capital gain within different status groups or income brackets. National income estimates in fact suggest that saving as a whole rose rather steeply from 1948 to 1950.

A more specific limitation on the use of data provided by the survey rests on the fact that it alludes only to property owners. An analysis of saving in relation to income will therefore yield a false impression of the actual situation for groups comprising many persons with no personal capital. The extent of this limitation is suggested by Table I. This shows that the incomes of property owners *as a percentage of the incomes of tax payers as a whole* is considerably lower for wage-earning groups than for any other status group. It must therefore be borne in mind, when reference is made in the following to the ‘savings percentage’—calculated only in relation to the assessed incomes of *property owners*—that a strong upward bias is exerted on the

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[1] Under tax law there is no allowance for depreciation in respect of real property.

TABLE I

Net Saving in the Sample Compared with Taxpayers' Total Income

Status Groups	*Taxpayers' total income mill. kr.* (1)	*Income of survey property-owners mill. kr.* (2)	*Net Saving according to the Survey, as a percentage of* (1)[1]	(2)
Proprietors, owners, etc.	585.5	345.3	7.5	12.8
Salaried employees, public servants, etc.	909.8	443.8	1.9	3.9
Wage earners	1,136.8	311.1	1.2	4.4
Other groups in the labour force...	73.3	24.2	2.1	6.2
Unoccupied and retired persons ...	262.6	144.1	−4.4	−8.1
Total	2,968.0	1,268.5	2.2	5.1

[1] The figs. in this column are of course only meaningful in a comparison with the succeeding column.

figure derived for the wage earning groups by comparison with those given for other status groups.

An analysis of net saving by income groups (v. Table III) shows that savings rise with income. Substantial negative saving occurred only in the lowest income groups, at the rate of kr. —685 per property owner in the group kr. 0–2,999. High levels of saving are found only in the highest two income groups, kr. 3,074 per property owner in the groups kr. 15,000–29,999 and kr. 27,846 per property owner in the highest group of all, where incomes are in excess of kr. 30,000. Thus net saving as a percentage of income varies over the whole income range from–35.5 per cent in the lowest group to 15.9 per cent and 49.6 per cent in the two highest groups.

Table II presents a breakdown of saving and capital gain by status groups and it can readily be seen that of the 5 basic groups the highest net saving figure (kr. 1,214 per property owner) is found in the group ' proprietors, owners, etc. '. There is, however, considerable variation among the individual occupations making up the basic status group; within the group of ' proprietors, owners, etc. ', for instance, the categories of ' hotel and restaurant proprietors ' and ' haulage contractors ' display negative saving, whilst own-account gardeners, managers and factory owners, and wholesale dealers have considerable positive savings. Variations in the saving percentage range from —26.8 per cent for hotel proprietors to +45.3 per cent for wholesale dealers. In fact 1949 proved to be a bad year for hotel proprietors with a marked falling-off in the sales of spirits, whilst the negative saving of the road haulage group must be explained by reference to the highly competitive conditions and decline in business following the post-war over-expansion in that industry.

For the groups of wage and salary earners net saving is approximately the same—kr. 330 and kr. 287 respectively. Other groups in the labour force show a saving of kr. 183, whilst unoccupied and retired persons have a negative saving, per property owner, of —kr. 349. It might be noted that

TABLE II

Change in Capital and Net Saving by Status Groups

Status Groups	*Change in Capital*			*Net Saving*	
	per property owner kr.	*per cent average property held*	*per cent average income*	*per property owner kr.*	*per cent average income*
(1) *Proprietors, Owners, etc.*					
Own-account gardeners ...	461	2.1	4.9	2,392	25.5
Managers and factory owners	2,550	2.6	14.7	3,985	22.2
Master artisans	100	0.4	1.2	616	7.1
Wholesale dealers, etc. ...	−3,300	−3.0	−15.7	9,525	45.3
Grocers, etc.	225	1.3	2.9	1,148	14.7
Drapers, retail dealers ...	628	2.1	7.9	610	7.7
Proprietors of hotels and restaurants	973	4.1	17.4	−1,501	−26.8
Haulage contractors ...	79	0.5	1.1	−702	−10.1
Professions	1,365	5.6	16.3	290	3.5
Total	543	1.6	5.7	1,214	12.8
(2) *Salaried employees, and public servants*					
Technical employees ...	56	0.6	1.2	289	2.9
Public servants, clerks ...	256	2.2	3.0	413	4.9
Total	193	1.8	2.3	330	3.9
(3) *Wage-earners*					
Employees in agriculture forestry and gardening	—	—	—	304	6.2
Shop assistants	126	1.4	1.7	324	4.2
Wage earners	266	4.6	3.7	321	4.4
Domestic servants... ...	99	1.8	3.3	217	7.3
Apprentices	76	3.7	3.7	207	10.0
Total	241	4.4	3.7	287	4.4
(4) *Other groups in Labour Force* Total	576	4.1	13.1	183	4.2
(5) *Unoccupied and retired Persons* Total	280	0.9	6.2	−349	−7.7

this figure is less, both absolutely and as a proportion of income, than the negative saving of the road haulage and hotel proprietors groups.

Table III shows the final analysis by income and status groups; the diagram A shows the correlation between income and saving obtained for three of the status groups. The group of proprietors and owners do not achieve a positive saving per owner until income is at a level of kr. 7000–9,999. The group of salaried employees and public servants shows negative saving only in the lowest income bracket, and to a slight extent in the income bracket kr. 5000–6,999. The wage-earning group has positive saving in all income groups except the lowest one. Unoccupied and retired persons do not show positive saving until the income group kr. 1,500–9,999 is reached. ‘Other groups in the labour force,’ for which the figures have been grossed

TABLE III

Net Saving by Status and Income Groups

Status Groups	*Income groups* 0–2,999 kr.	3,000–4,999 kr.	5,000–6,999 kr.	7,000–9,999 kr.	10,000–14,999 kr.	15,000–29,999 kr.	kr. 30,000–and over	*Total*
Proprietors, Owners, etc.:								
Net saving kr. 1,000	−7,253	−4,960	−2,438	1,970	6,734	15,249	34,738	44,040
Net saving per property owner kr. ...	−1,744	−863	−300	254	1,084	4,835	31,267	1,214
Net saving as per cent of income ...	*−110.3*	*−22.3*	*−5.1*	*3.1*	*9.0*	*23.2*	*53.6*	*12.8*
Average income in the groups:[1]	1,581	3,877	5,861	8,207	11,994	20,871	58,331	—
Salaried employees and public servants:								
Net saving kr. 1,000	−2,470	222	−81	5,924	4,976	6,350	—	17,239
Net saving per property owner kr. ...	−1,014	32	−7	382	417	1,636	—	330
Net saving as per cent of income ...	*−47.0*	*0.8*	*−0.1*	*4.7*	*3.6*	*9.2*	—	*3.9*
Average income in the groups:	2,159	4,094	5,930	8,193	11,660	17,814	—	—
Wage earners:								
Net saving kr. 1,000	−528	1,676	1,238	6,540	3,279	—	—	13,654
Net saving per property owner kr. ...	−75	234	104	430	534	—	—	287
Net saving as per cent of income ...	*−4.2*	*6.0*	*1.7*	*5.2*	*4.7*	—	—	*4.4*
Average income in the groups: ...	1,810	3,870	6,103	8,206	11,259	—	—	—
Other groups in the labour force:								
Net saving kr. 1,000	−1,226	207	—	—	—	—	—	1,006
Net saving per property owner kr. ...	−517	147	—	—	—	—	—	183
Net saving as per cent of income ...	*−29.5*	*3.8*	—	—	—	—	—	*4.2*
Unoccupied and retired persons:								
Net saving kr. 1,000	−6,538	−2,454	−2,566	−376	−128	221	—	−11,115
Net saving per property owner kr. ...	−632	−200	−429	−172	−185	644	—	−349
Net saving as per cent of income ...	*−29.7*	*−5.1*	*−7.4*	*−2.1*	*−1.5*	*2.7*	—	*−7.7*
Total								
Net saving kr. 1,000	−18,015	−5,309	−3,678	14,144	15,940	23,676	38,066	64,824
Net saving per property owner kr. ...	−685	−158	−97	342	629	3,074	27,846	373
Net saving as per cent of income ...	*−35.5*	*−4.0*	*−1.6*	*4.1*	*5.4*	*15.9*	*49.6*	*5.1*

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[1] Average income in the income intervals is here given only for the first three status groups (v. Diag. A).

up only for the lowest two income groups, show negative net saving in the lowest of these.[1]

We should not be surprised to find that the highest negative saving figures in the lowest two income groups belong to the group of proprietors, owners, etc. The incomes of this group characteristically fluctuate more widely than those of other groups and the expectation of higher income in the following years renders it less dangerous to avoid, in any single year, a ' normal ' retrenchment of personal expenditure if income is low. The relatively large amount of property per owner in this group may provide another reason why these persons show the relatively greatest amount of negative saving in the low income groups. As an illustration of the financial situation of proprietors, owners, etc., in 1949, it might be mentioned that in the survey a little over half of the persons in the group were to be found in the income group kr. 0–6,999.

Since it is only in the income group kr. 30,000 and over that deviations in the saving figures between status groups could be satisfactorily explained by reference to great disparities in average income, a rough uniformity in saving figures might be expected above an income of kr. 7,000. In fact this is not the case, as can easily be seen from diagram A. The approximate uniformity characterizing the saving done in the income groups kr. 7,000–9,999 does not extend to the higher income groups. At these higher levels of income ' proprietors, owners, etc.' save more than salaried employees and considerably more than wage-earners. In fact, of the total saving of kr. 65 million, kr. 35m. is accounted for by proprietors, owners, etc., in the income group kr. 30,000 and over.

The conclusions to be drawn from diagram A are reasonably obvious: the savings percentage of the group of proprietors and owners increases more rapidly with income than in the case of salaried or wage-earning employees, although in the low income groups there is marked negative saving. Above an income of kr. 20,000, however, the savings percentage for the group rises very rapidly from about 30 per cent to levels approaching 90 per cent for incomes in excess of kr. 30,000. The savings ratio for the ' salaried employees ' group in the income bracket kr. 7,000–9,999 is 10–15 per cent and below this it is typically negative.

All but the lowest income group of wage-earners have positive saving but increases in income seem to yield very little increase in saving: the savings ratio is about 5 per cent.

The group of unoccupied and retired persons is characterized by negative saving at all levels of income below kr. 20,000 and even at higher levels of income than this little saving is done.

Change in Capital

The quality of the returns in the survey on the subject of capital gain suggests that comparison of figures for individual occupation groups could

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[1] It must be remembered that insurance premia are not included under net saving.

Diagram A.

The Correlation between Income and Saving

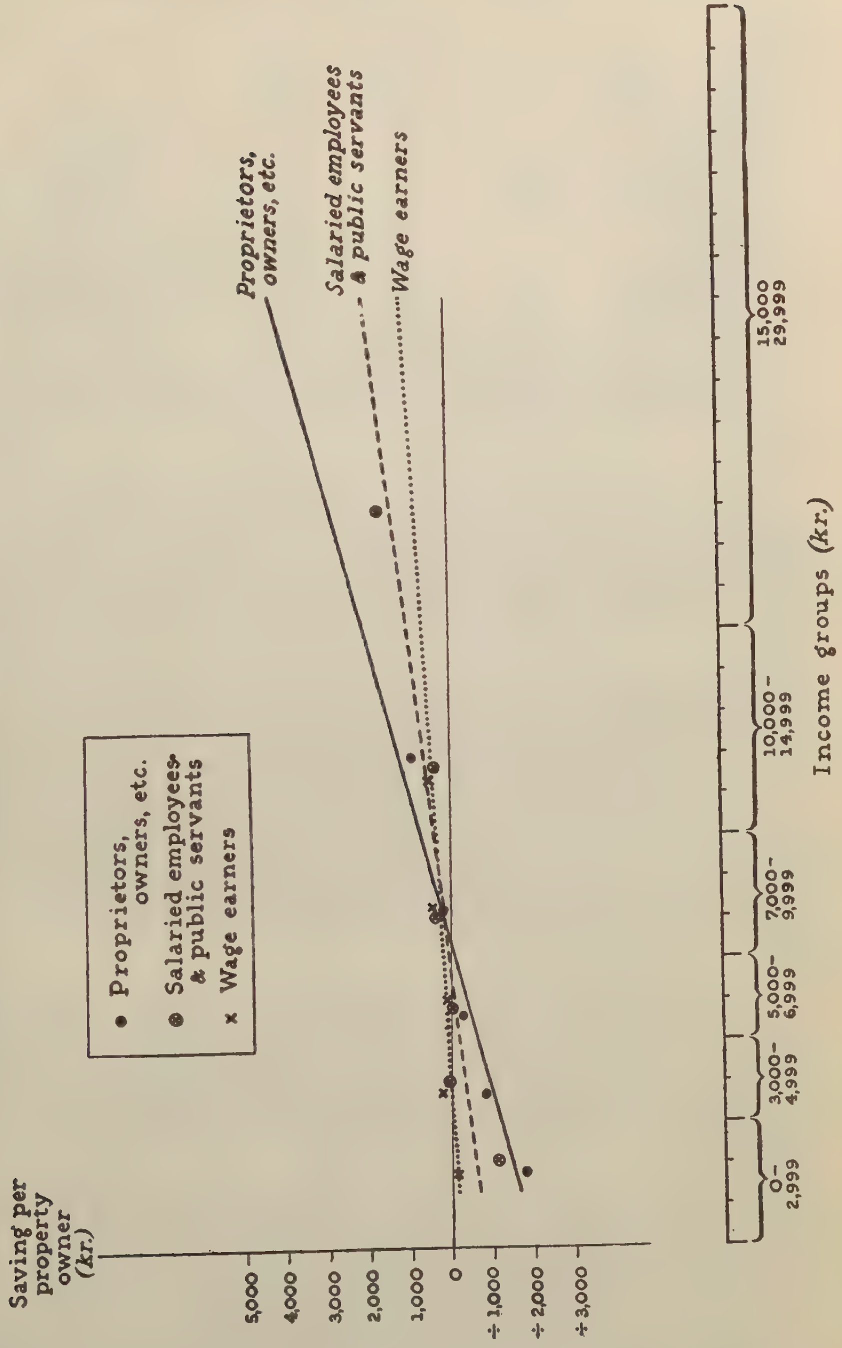

TABLE IV

Distribution of Assets and Liabilities Dec. 1949

	1,000 kr.	*% dist.*
Assets		
Bank Deposits	308,942	6.7
Deposits with savings banks	580,818	12.5
Securities	1,022,644	22.0
Business assets[1]	589,878	12.7
Real Estate (assessed value)	1,811,633	39.0
Other assets[2]	327,802	7.1
All Assets	4,641,717	100.0
Liabilities		
Mortgage debt	1,056,706	22.8
Other liabilities	519,502	11.2
All liabilities	1,576,208	34.0
Net personal wealth (assets *less* liabilities)	3,065,509	66.0

[1] Includes machinery and tools, fixtures and fittings, stock-in-trade, debtors.

[2] Calculated as a remainder, this figure includes debts secured by private mortgage deals and other instruments of debt.

only be made with extreme caution. It is, however, possible to proceed with more confidence on the question of broad comparison between the five basic status groups. Table II demonstrates that the largest gains per property owners were realized in the groups of ‘ proprietors and owners, etc.’ and ‘ other groups in the labour force ’; thereafter come unoccupied and retired persons and finally wage earners and salaried employees and public servants. In *total aggregate terms* the group of proprietors and owners, etc., in fact enjoyed the largest capital gains—nearly kr. 20 million, but in *relation to property held* the percentage gain was largest for the group of wage-earners, at 4.4 per cent. Expressed as a *percentage of income*, capital gain was highest for ‘ other groups in the labour force ’ and ‘ unoccupied and retired persons.’

The trend in respect of income is clearly shown in Table III; as income rises to kr. 15,000 so capital gain becomes relatively less important. Above this level, however, the trend is reversed until, when incomes are in excess of kr. 30,000, capital gain amounts to 16.4 per cent of income.

The Composition of Property

The data obtained from the tax returns was sufficiently detailed to provide a refined breakdown of the structure of assets and liabilities at the end of the period covered by the survey. As a caution to interpretation it should be pointed out that tax return data are liable to a general downward bias which is likely to be most severe in the figures given for business assets and ‘ other assets ’.

Table IV shows the main results of the breakdown of assets and liabilities: total assets amounted to kr. 4,641 m., total liabilities standing at a level one-third of this figure. As a consequence net personal wealth must amount to two-thirds of total assets–kr. 3,065m. The analysis of the structure of assets reveals real estate as the major component, making up 40 per cent of the total; securities comprise a further 20 per cent. The remainder is made up of

TABLE V

Percentage Distribution of Assets and Liabilities as at 31 December, 1949, by Social Status Groups

	Proprietors, owners etc. %	*Salaried employees, public servants* %	*Wage earners* %	*Other groups in the labour force* %	*Unoccupied and retired persons* %
Assets:					
Bank deposits	8.0	6.8	8.4	9.3	3.8
Deposits with savings banks	6.6	21.4	30.7	19.0	11.1
Securities	16.6	19.5	8.3	29.3	35.5
Business assets	28.3	—	—	—	—
Assessed value of real est....	33.2	43.8	44.7	28.9	44.6
Other assets	7.3	8.5	7.9	13.5	5.0
All assets	100.0	100.0	100.0	100.0	100.0
Liabilities:					
Mortgage debt	19.9	26.8	24.8	15.8	24.9
Other liabilities	21.1	4.3	1.8	6.0	2.6
All liabilities	41.0	31.1	26.6	21.8	27.5
Assets less liabilities ...	59.0	68.9	73.4	78.2	72.5

deposits with savings banks and business assets each constituting about 12–13 per cent of aggregate assets, and bank deposits and other assets, each making up 6–7 per cent. The total mortgage debt, the main item in the structure of liabilities, amounts to about 60 per cent of the assessed value of real estate.

The structure of assets and liabilities varies considerably between status and income groups, and Table V provides an overall analysis of these variations by status groups. Table VI provides a more detailed breakdown of the distribution of three types of asset—bank deposits, deposits with savings banks and securities—with respect to income and social status groups.

The initial analysis demonstrates that securities are the most important asset for unoccupied and retired persons, whilst investment in business assets is the dominant item in the structure of assets held by proprietors and owners, and is a form of asset which quite naturally is not held by other status groups. Deposits with savings banks are particularly important for the groups of wage earners and salaried employees.

The more detailed analysis of Table VI confirms and elaborates these impressions. However, it is clear that within the group of unoccupied and retired persons, holdings of securities come to assume a relatively larger proportion of total assets held as income increases; this tendency is also characteristic of the structure of assets held by the group of proprietors and owners. These features account for the fact that in an overall analysis of assets it will be found that the share occupied by securities at first falls as income increases, then rises. In the middle ranges of income the investment habits of the wage-earning and salaried employees' groups are dominant, whilst at the extremes of the income range it is the predominance of the groups of unoccupied and retired persons and proprietors and owners which will account for the large proportion of securities held as assets. Whilst the

TABLE VI

Percentage distribution of Bank Deposits, Deposits with Savings Banks, and Securities, by Income Brackets and Social Status Groups

Social Status Groups	Income brackets						
	0–2,999 kr. %	3,000–4,999 kr. %	5,000–6,999 kr. %	7,000–9,999 kr. %	10,000–14,999 kr. %	15,000–29,999 kr. %	30,000–kr. and over %
Proprietors, owners, etc.:							
Bank deposits	24.4	26.4	26.2	24.0	25.0	25.7	26.2
Deposits with savings banks	32.1	38.6	33.4	34.5	29.0	13.3	9.8
Securities	43.5	35.0	40.4	41.5	46.0	61.0	64.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Salaried employees, public servants:							
Bank deposits	14.7	14.8	10.8	12.9	15.7	14.2	20.5
Deposits with savings banks	48.1	58.7	61.1	52.8	41.9	30.7	13.9
Securities	37.2	26.5	28.1	34.3	42.4	55.1	65.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Wage earners:							
Bank deposits	16.9	21.4	22.0	16.5	12.0	—	—
Deposits with savings banks	67.9	70.0	58.9	67.9	63.3	—	—
Securities	15.2	8.6	19.1	15.6	24.7	—	—
Total	100.0	100.0	100.0	100.0	100.0	—	—
Other groups in the labour-force:							
Bank deposits	20.7	14.5	—	—	—	—	—
Deposits with savings banks	39.3	52.1	—	—	—	—	—
Securities	40.0	33.4	—	—	—	—	—
Total	100.0	100.0	—	—	—	—	—
Unoccupied and retired persons:							
Bank deposits	9.7	8.9	6.9	6.7	5.8	1.6	—
Deposits with savings banks	38.6	33.7	25.6	18.6	11.3	5.2	—
Securities	51.7	57.4	67.5	74.7	82.9	93.2	—
Total	100.0	100.0	100.0	100.0	100.0	100.0	—

proportion of assets held in the form of deposits with savings banks is greatest for the status groups of wage-earners and salaried employees, it is negatively correlated with increases in income within these groups.

The proportion of assets held as bank deposits does not appear to vary very considerably with income within any one status group, except for the steady decline characteristic of the group of retired and unoccupied persons.

It was found that whatever the comparative importance of deposits with savings banks the percentage of property owners with deposits of this type does not vary much among the status groups, the group of proprietors and owners being the sole exception to this rule. (In this group comparatively few persons held assets in this form). On the other hand a considerable variation is to be found in the average amount deposited: as might be expected the size of the deposits is strongly correlated with income, and proprietors, owners, etc., and unoccupied and retired persons hold the highest average deposits, wage-earners the lowest.

Comparisons between income and wealth

The findings of the survey have been completed by a comparison between income and wealth; for this purpose Tables VII and VIII have been constructed showing average income in different property intervals, and average property in the income intervals. The comparison has been made only for

TABLE VII

Average Incomes in Given Property Intervals[1]
Social Status groups

Property Intervals kr.	Proprietors and Owners		Salaried employees and public servants		Wage Earners		Unoccupied and retired persons		Total[2]	
	av. prop. th. kr.[1]	*av. inc. th. kr.*	*av. prop. th. kr.*	*av. inc. th. kr.*	*av. prop. th. kr.*	*av. inc. th. kr.*	*av. prop. th. kr.*	*av. inc. th. kr.*	*av. prop. th. kr.*	*av. inc. th. kr.*
1— 9,999	3.9	5.8	3.4	7.7	3.1	6.4	3.5	3.7	3.4	6.2
10,000— 19,999	14.6	8.6	14.1	9.4	13.1	7.1	14.2	4.0	14.0	7.5
20,000— 39,999	29.1	8.9	26.7	10.1	25.6	8.5	27.9	4.4	27.8	8.1
40,000— 69,999	53.0	13.1	51.5	13.0	50.9	7.7	52.0	4.9	52.2	10.7
70,000—199,999	112.8	19.8	105.0	16.0	92.4	9.1	112.7	6.6	111.3	14.2
200,000 and over	473.5	50.4	368.6	40.0	275.6	15.7	471.0	19.9	464.1	35.9

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[1] Rounded to the first decimal place.

[2] *I.e.* including ' other groups in the labour force '.

TABLE VIII

Average Properties in Given Income Intervals
Social Status Groups

Income Intervals kr.	Proprietors and Owners		Salaried employees and public servants		Wage Earners		Unoccupied and retired persons		Total[2]	
	Av. inc. th. kr.[1]	*av. prop. th. kr.*	*av. inc. th. kr.*	*av. prop. th. kr.*	*av. inc. th. kr.*	*av. prop. th. kr.*	*av. inc. th. kr.*	*av. prop. th. kr.*	*av. inc. th. kr.*	*av. prop. th. kr.*
0— 2,999	1.6	14.6	2.2	7.3	1.8	3.6	2.1	12.0	1.9	9.4
3,000— 4,999	3.9	10.3	4.1	5.7	3.9	4.1	3.9	13.2	3.9	9.0
5,000— 6,999	5.9	11.1	5.9	5.9	6.1	5.7	5.8	26.5	5.9	10.3
7,000— 9,999	8.2	19.7	8.2	8.6	8.2	5.8	8.3	64.1	8.2	12.9
10,000—14,999	12.0	34.3	11.7	13.2	11.3	7.5	12.7	178.5	11.7	21.7
15,000—29,999	20.9	92.4	17.8	29.9	16.3	20.0	24.0	476.8	19.3	75.1
30,000 and over	58.3	327.4	45.5	156.7	—	—	50.7	809.8	56.2	338.6

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[1] Rounded to the first decimal place.

[2] I.e. including ' other groups in the labour force '.

four of the five status groups as the statistical material relating to 'other groups in the labour force' proved to be inadequate. The charts A and B accompany the tables.

A study of the two tables and the accompanying charts suggests certain conclusions, about the relation of income and wealth for each status group, as follows:

Proprietors, owners, etc.

It is clear that above a certain level of income there is a marked correlation between income and property; on the whole this is to be explained by reference to the fact that for this group property is a condition of carrying on business, and hence of income. Persons in this group with high levels of income will have been able to save up for the purpose of expanding their business. The interest yield on property owned is an item of secondary importance here. The fact that the correlation breaks down for lower incomes must be partly a function of the extremely heterogeneous character of this status group which comprises such occupational groups as small retailers; the breakdown is undoubtedly also due to the extreme fluctuations in income which characterize the group as a whole.

Salaried Employees and Public Servants

As the persons comprising this group rely almost exclusively on salaries for their living it is not surprising to find only a weak correlation between average income and average personal wealth. Above an income level of kr. 15,000, however, the correlation is more pronounced; this is partly to be explained by reference to the greater saving possibilities which accompany higher incomes. However, in a group whose maximum income levels are characteristically limited the interest yield on property (which may be inherited) is often a contributing factor in the formation of high incomes.

Wage Earners

The initial conclusions derived for salaried employees and public servants apply with greater force to the wage-earning group. Property, which is not a condition of work, appears to be almost constant through the income groups; there is a slight tendency for income to rise through the property brackets which suggests a limited importance for the interest yield.

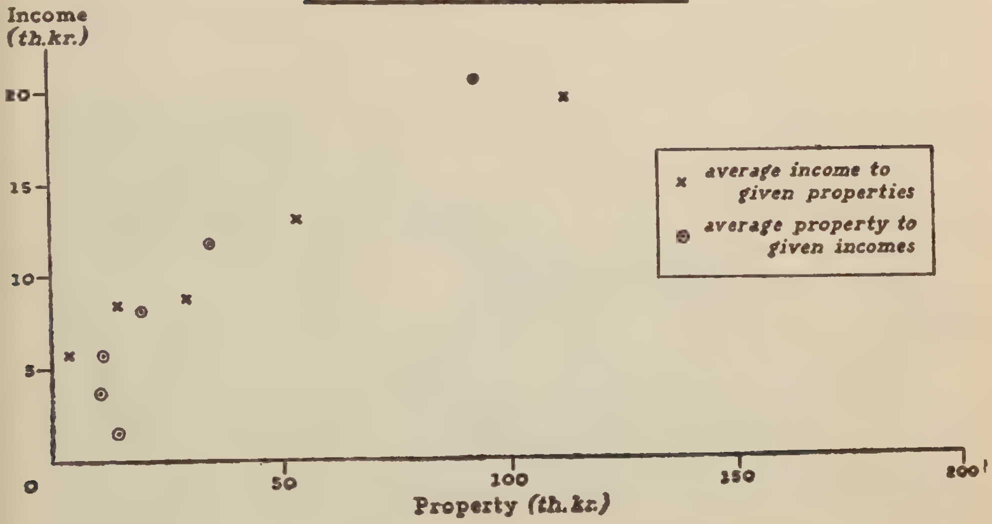
Unoccupied and Retired Persons

The correlation between income and property was most marked in this case: this group is dependent for its income on its holdings of property. An exception must be made for the lowest income groups where property is insignificant and property incomes would lead to reduced pensions.

The analysis clearly demonstrates that correlations are low for wage-earning and salary-earning groups, where property is not a condition of income, and that where this relationship holds—in the upper income groups of the unoccupied and retired persons, and in most income groups of proprietors and owners—the correlation between income and wealth is high.

Chart A.

Proprietors, Owners, etc.



Salaried Employees and Public Servants

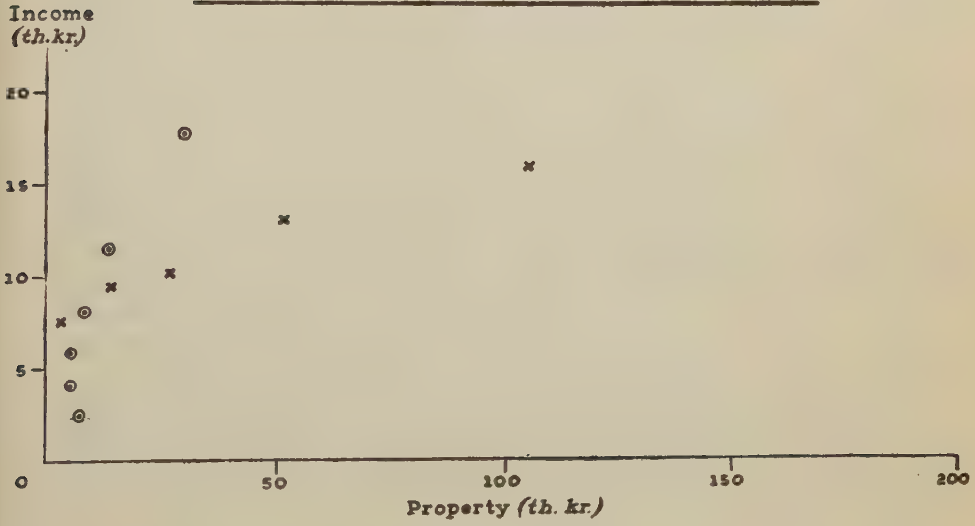


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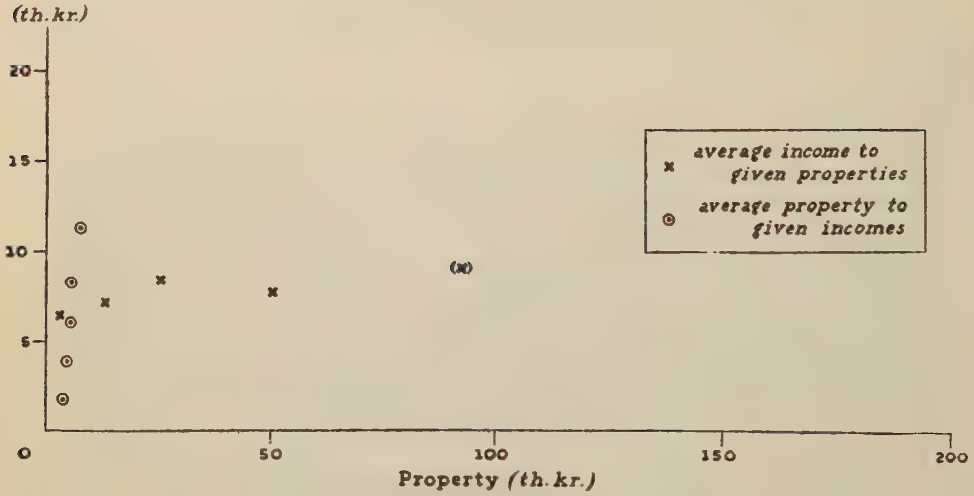
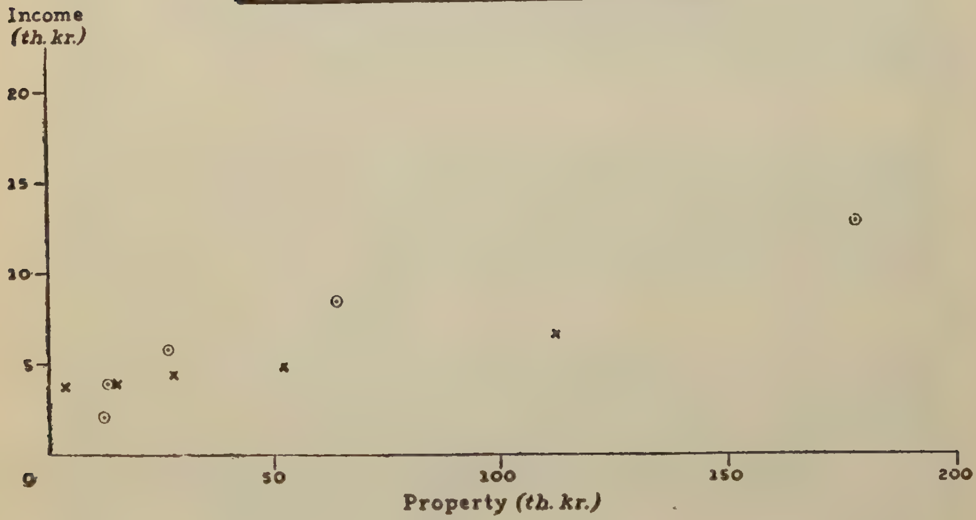
Chart B.

Wage Earners



Unoccupied and Retired Persons



A PILOT SURVEY OF INCOMES AND SAVINGS

By T. P. Hill

The Oxford Institute of Statistics carried out national surveys of incomes and savings in 1952, 1953 and 1954 and collaborated with the Central Statistical Office on a fourth Survey taken in 1955.[1] Since 1955, no savings surveys have been undertaken in this country (apart from a small experimental survey of the Institute's in 1956) despite the remarkable rise in the volume of personal savings three or four years ago which is suggested by the estimates of savings derived from national income and expenditure statistics. In view of the desirability of undertaking a fresh savings survey the Institute of Statistics decided to carry out a pilot survey in January 1959 designed to test a new and potentially much more efficient sampling method. It is no longer necessary, however, for the Institute to contemplate a full-scale national survey since the C.S.O. is itself to carry one out as a result of the recommendations of the Radcliffe Report which appeared in August 1959. It is specifically suggested in that document that 'further savings surveys should be made at regular intervals.'[2] Thus, the Institute's pilot survey has been made somewhat gratuitous, but since it is of interest from the point of view of general survey methodology it has been decided to publish a brief account of the method used.

Introduction

When investigating savings behaviour by survey methods, one would usually not aim to draw a simple random sample of the community as a whole. For example, suppose that interest were centred on estimating the shape and properties of the savings function; the best procedure then might be to take a sample which contained approximately equal numbers of people at every level of income. Alternatively, suppose that the main objective were to estimate mean savings as accurately as possible from a sample of a given size; again, the best procedure would be to increase the sampling fraction as income increases since the variability of savings also increases as income rises. Furthermore, one may be specially interested in particular sub-groups, such as the self-employed, so that one may wish to oversample them in order that the sample contain a large enough number of them for reasonably accurate inferences to be drawn about their behaviour.

In practice, of course, the snag is that it is usually impossible to tell in advance of calling on a person what his income or occupation actually is, which makes it impossible to predetermine the structure of the sample. In more technical terms it may be said that although the potential gains from stratification combined with variable sampling fractions would be enormous in a savings survey, the requisite sampling frame which would enable the stratification to be made is simply not available. The electoral register (which was used on previous savings surveys) is probably the best available sampling frame which can be used to draw a national sample, and the electoral register permits only a very limited amount of stratification, *e.g.* by area or town size, which are very weak variables by which to stratify in a survey of this kind since savings behaviour is hardly affected by them.

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[1] For reports on these surveys, see various articles in the Bulletin from 1953 onwards.

[2] *Report of the Committee on the Working of the Monetary System*, Cmnd., 827, para. 838, p. 294.

The basic idea behind the pilot survey was to use information collected during other surveys as a means of stratification. This can only be done in conjunction with an organisation taking regular surveys and the Institute was fortunate to obtain the collaboration of the British Market Research Bureau (B.M.R.B.) for this experiment. B.M.R.B. takes national surveys of ownership and purchases of durable goods twice each year and it was agreed to use some of the information collected on these surveys to design a savings survey sample. Each B.M.R.B. durable goods survey consists of a national sample of households drawn from the electoral register, the sample being an efficiently designed probability sample. Each survey covers 4,000 households, a response rate of around 75 per cent usually being obtained. Thus, if the two most recent surveys were combined, one would have a sample of about 6,000 households about which a great deal of information was known and a further 2,000 (the non-respondents) about which very little was known. A subsample of these households could therefore easily be drawn for a savings survey which would include all the more interesting or important households and which would exclude (at random) a certain proportion of the less interesting households. Such a subsample could never, of course, be as efficient as the original combined sample of 8,000 households, but the crucial advantage of a scheme of this kind is that by skilful design the reduction in efficiency need not be nearly so great as the reduction in sample size. It is conceivable, for example, that a sample of 1,500 drawn in this way might be as efficient for most purposes as a simple random sample of, say, 5,000; the latter figure must be well under 8,000 but it also can be made much larger than 1,500 by efficient design. In short, it may be possible to take a small but highly efficient sample by this sort of method; it would be more efficient for exactly the same reason that a stratified sample with variable sampling fractions can be much more efficient than a simple random sample of the same size.

Unfortunately, there are also certain fairly obvious disadvantages of a scheme of this kind. First, and most important, is the risk that a low response would be obtained since the great majority of households interviewed would already have been interviewed a few months previously on the B.M.R.B. durable goods survey. It should be noticed that in order to ensure that the savings sample was not biased, a sub-sample of the failures on the B.M.R.B. survey would have to be included so that not all households would necessarily have been interviewed before. It was in fact primarily to try to obtain some idea of the effect of the previous interview on response in the savings enquiry that it was decided to carry out a pilot survey. Many of the usual reasons for taking a pilot survey, such as testing the questionnaire, are hardly relevant since four national surveys of savings have already been taken in the past.

Another disadvantage is that the information collected some months previously may become out of date as people change their jobs or addresses, etc. This danger is not likely to be serious given that the information would be generally only about three to nine months old. In any case, interviews would be taken with the people currently living at the various addresses, irrespectively of whether or not they were the same people who were living there at the time of the earlier survey. The extent to which people change their addresses does not introduce bias into the sampling procedure; it merely reduces its efficiency.

The method of the pilot survey

In designing the pilot survey, use was made of the most recent B.M.R.B. durable goods survey (taken four months previously). No financial information was collected in the durable goods surveys, but questions were asked about the head of the household's age, sex, education and occupation and about housing ownership as well as durable goods ownership. These data are powerful indicators of economic status and hence are themselves extremely effective means of stratification. For simplicity in the pilot survey, only two strata were used; namely, those households whose heads were professional or self-employed and all other households respectively. It was decided to oversample the former or ' upper ' stratum quite heavily at the expense of the latter or ' lower ' stratum by the following simple device. Eight districts were selected for the pilot survey and in two of these all the households drawn in the previous B.M.R.B. sample were included in the pilot survey whereas in the remaining six only those households which fell into the upper stratum were to be interviewed. The districts were in fact electoral wards which were used as first-stage sampling units in the B.M.R.B. survey. The eight districts chosen for the pilot were all districts with a fairly high proportion of upper stratum households and were all located in and around London for convenience. The total number of households included in the pilot survey came to 123.

The basic sampling unit used in the pilot survey, as in the four previous national savings surveys, was an ' income unit ' which is a rather more narrowly defined unit than a household although it often coincides with the latter. An income unit is defined as follows: all adults aged 18 or over comprise separate income units except that husband and wife living together are treated as a single income unit, children under 18 being included in the same income unit as their parent(s) or guardian(s). The number of income units included in the pilot survey turned out to be 141. An income unit whose head is also head of the household is called a ' primary ' income unit; other income units are called ' secondaries '. Typical examples of secondary income units are children aged 18 or over still living with their parents or elderly parents living with their married children. In the six districts con-

TABLE I

Response Rates

Result	*All income units* *Number*	*All income units* *Per Cent*	*Primary income units* *Number*	*Primary income units* *Per Cent*
Complete success[1]	64	45.4	55	44.7
Incomplete success[1]	13	9.2	11	8.9
Refusals:				
during interview	7	5.0	7	5.7
outright refusal	20	14.2	19	15.4
too old or ill	11	7.8	6	4.9
interviewed before	18	12.8	18	14.6
Non-contact	8	5.7	7	5.7
Total	141	100	123	100

[1] A 'complete' success was obtained when full information was given about income, savings and net worth; an 'incomplete' success was obtained when at least income or savings were given, but full financial information was not obtained.

taining only upper stratum households, the interviewers were instructed to collect information about the primary income unit only; in the other two districts a separate interview was to be taken with each income unit in the household.

The fieldwork in the pilot survey was carried out by five experienced interviewers from the permanent field staff of B.M.R.B., but they were carefully instructed to say that they were calling on behalf of the Institute of Statistics and not on behalf of B.M.R.B. The interviewers were also instructed not to mention the previous B.M.R.B. survey unless the respondent raised the matter himself. The interviewers were told to approach the survey as if it were a completely fresh survey and not to regard it as a reinterview survey. The pilot survey was in some respects distinctly easier than a conventional reinterview survey, since interviews had to be obtained with the present occupants of each address, irrespectively of whether or not they were the people who had actually been interviewed in the previous B.M.R.B. survey.

The results of the pilot survey

A summary of the response achieved in the pilot survey is given in Table I. Complete success was attained in only 45 per cent of the cases but another 9 per cent of the questionnaires were acceptable even though incomplete. The proportion of non-contacts was satisfactorily low (the interviewers were told to make several call-backs if necessary) but no less than 40 per cent of respondents simply refused to co-operate for one reason or another. In 5 per cent of the cases, the interview actually got started but the informant refused to answer the vital financial questions so that the interviews had to be treated as failures. The interviewers were also unable to interview a further 8 per cent because they were too old or ill to participate. Most failures, however, were refusals to co-operate either because the respondents objected to this type of survey or because they said they had already been interviewed a few months previously and did not want to be bothered twice. Of course, the ostensible reason given for refusing may not always have been the real reason; many who just flatly refused may have done so because of the previous B.M.R.B. interview without actually saying so, while others may simply have used the previous interview as a convenient excuse for not co-operating. *Prima facie*, however, the answer to the question which the pilot survey set out to investigate seems to be that an extra 10 to 15 per cent of people may refuse to participate in a survey of this kind because of the effect of the previous interview.

It is necessary to exercise extreme caution in drawing conclusions from the pilot survey partly because of its small size and partly because it is by no means a random sample of the population *as a whole*. It is, however, worth analysing the response rate achieved in the pilot in more detail to see what special factors were at work. Any detailed analysis of response must involve collating the results obtained in the pilot with information obtained in the previous B.M.R.B. survey, but this requires that further analysis be confined to primary income units only, since the B.M.R.B. survey was conducted on a household basis. The response obtained from primary income units (which is also shown in Table I) was actually rather worse than the overall response. Altogether, 18 secondary income units were identified in the pilot; 11 of these were successfully interviewed, but no less than 5 out of the 7 failures were due to the heads of the income units being too old or ill to be interviewed—these 5 being presumably elderly relatives of the head of the household. There was, in fact, only one outright refusal from a secondary income unit. It is perhaps worth noting that none of the secondaries would have been interviewed in the previous B.M.R.B. survey so that none of them could refuse for this reason.

As mentioned above, one of the main difficulties in analysing the results of the pilot survey is the fact that it comprises a rather special sample since certain occupational groups were deliberately oversampled. Indeed, one of the objectives in taking the pilot was to test the effectiveness of the experimental sampling procedure as a means of oversampling certain categories. The sampling method was obviously bound to yield a very high proportion of self-employed and professional people, provided such persons are not in the habit of changing their jobs or addresses very frequently. In fact, out of 80 cases where the occupation of the head of the household (*i.e.* head of the primary income unit) was ascertained, no less than 21 turned out to be self-employed, including 10 self-employed professional workers, and a further 28 were salaried professional workers. Moreover, the results of the pilot also showed quite clearly how powerful occupation is as a stratifying variable in the absence of actual financial information. Income was ascertained for 58 primary income units; 30 of these had incomes of over £1,000 per year while 7 had incomes of over £2,000; the estimated average income was over £1,300 per year. The sample seems to have contained roughly ten times as many people with incomes of over £1,000 as there are in the population at large. Indeed, the success of the pilot from this point of view is one of the main reasons for the low response obtained, since there is little doubt that response tends to decline as income increases in this type of survey. It is not merely that people with high incomes are more reticent about their finances, but also that a survey of this kind generally involves them in a great deal more time and trouble since their personal financial affairs are usually much more complicated than those of people with low incomes. Self-employed persons also tend to find the survey very difficult, irrespectively of their income, because of the complex entanglement between their personal and business finances.

The irony of this type of survey, therefore, is that the more successful the sample design in oversampling the higher income groups and self-employed, the lower the crude response rate is likely to be. Thus, the low response obtained in the pilot is to some extent a measure of its success. It must be strongly emphasised, of course, that in assessing the results of a full-scale survey attention would have to be paid not to the crude response rate but to the *weighted* response (where the weights allotted to income units in the various strata would be inversely proportional to the sampling fractions used in the strata.) One of the main difficulties, therefore, in interpreting the results of the pilot survey is to tell to what extent the low response is due to oversampling the upper income groups and to what extent it is due to the effect of the previous B.M.R.B. survey. For one factor which must not be overlooked is the possibility that these two effects may not be independent of each other; it is quite conceivable that the depressing effect on response of the previous durable goods survey may itself tend to increase as income rises if only for the simple reason that the durable goods survey also tends to involve much more time and trouble for richer people.

Since the pilot survey consisted of a very small sample, the results may have been unduly affected by special circumstances and for this reason it is worth briefly considering the pattern of response in more detail, especially since so much is known about most respondents from the previous B.M.R.B. survey. One fact which immediately emerges from a closer inspection is that there seems to have been excessive variation in the response rates achieved by the different interviewers, as can be seen from Table II. The fieldwork was so arranged that the first three interviewers worked in the six districts where only upper stratum households were to be interviewed, while the fourth and fifth interviewers worked in the two districts remaining which contained both upper and lower stratum households. *A priori*, therefore one would expect the fourth and fifth interviewers to attain the highest response, even though their districts were also chosen because they contained a large proportion of upper stratum households. The fourth interviewer did in fact achieve the highest (and very satisfactory) response of 71 per cent (among primary income units) but the fifth interviewer fared very badly with easily the lowest response of all. Although an experienced interviewer, the fifth interviewer seems to have been lacking in enthusiasm since at the end of the survey she said that she herself considered the survey much too much of an

TABLE II

Response Rates by Interviewer
(Primary Income Units)

Result	*Interviewer*					*Total*
	First	*Second*	*Third*	*Fourth*	*Fifth*	
Complete success	9	6	8	21	11	55
Incomplete success	3	2	1	4	1	11
Refusal:						
during interview	1	1	1	3	1	7
outright refusal	2	3	2	2	10	19
too old or ill	1	2	—	2	1	6
interviewed before	3	1	5	2	7	18
Non-contact	1	1	2	1	2	7
Total	20	16	19	35	33	123

imposition on respondents. Unfortunately, she did not make this attitude known at the briefing, and it was undoubtedly reflected in the poor response she obtained. Her performance is a good illustration of the general point that good interviewer morale is absolutely vital to the success or failure of any survey; response is by no means entirely dependent on the nature or content of a survey; it depends equally on the ability and enthusiasm of the interviewers in the field.

The remaining observations on the response obtained in the pilot will be based on the prior information collected in the B.M.R.B. survey. Since there were some doubts whether 12 out of 123 primary income units interviewed in the pilot were the same households as those interviewed on the earlier survey, it was decided to ignore them. Ten of the discarded interviews were successes in the pilot so that the response rate for the remaining 111 matched primary income units is artificially low.

Response rates according to occupation and type of employment (at the time of the B.M.R.B. interview) are given in Table III. It is perhaps surprising to find response higher among professional workers than in other occupations in view of their relatively high incomes, but there is also some evidence from a previous savings survey carried out by the Institute to suggest that professional people are fairly co-operative. Within the professional group, however, a much higher response was obtained from lower than from higher professional workers, and by far the lowest response was obtained from people working in managerial positions in industry or commerce. Response also seems to be positively related to amount of education (which was also ascertained on the B.M.R.B. survey) and to some extent this would tend to counteract the depressing effect of a high level of income on response. Nevertheless, the results of the pilot suggest that the effects of occupation on response may be more complicated than a simple explanation in terms of relative occupational income levels would imply.

Turning to the distinction between self-employed and others, which cuts across the occupational classification proper, the picture is much clearer.

TABLE III

Response Rates by Occupation[1]
(Primary Income Units)[2]

Result	*Professional and executive*	*Clerical and service*	*Manual*	*Other*	*Self-employed*	*Not self employed*	*N.A.*	*Total*
Complete success ...	24	4	11	6	5	36	4	45
Incomplete success ...	5	2	1	3	5	5	1	11
Refusal:								
during interview ...	—	2	1	4	3	1	3	7
outright refusal ...	4	4	5	6	3	11	5	19
too old or ill	2	—	2	2	2	4	—	6
interviewed before ...	6	7	2	1	2	14	—	16
Non-contact	5	1	—	1	1	5	1	7
Total	46	20	22	23	21	76	14	111

[1] Occupation at time of B.M.R.B. interview.

[2] Excluding 12 income units where it was doubtful whether the same household was being interviewed in both the B.M.R.B. and the pilot surveys.

The self-employed do not seem to be any more prone to refuse outright, but it is very much more difficult to complete the interview successfully for reasons already mentioned. In fact, even if the interview actually gets started, there seems to be a less than even chance of its being completed successfully; a third of the interviews taken with the self-employed in the pilot broke down completely[1] while another third resulted in only partially completed questionnaires. Furthermore, the quality and reliability of the information collected from the self-employed is generally much poorer than for other types of informants, so that often apparently successful self-employed questionnaires have to be rejected subsequently because the information is inconsistent or otherwise unsatisfactory.

Finally, the response obtained in the B.M.R.B. and pilot surveys can be compared. This comparison is, however, complicated by the fact that all the upper stratum households in the pilot had been successfully interviewed on the earlier survey merely as a result of the design of the pilot. In consequence, all the failures in the earlier survey occurred in the quotas of the fourth and fifth interviewers. For this reason, the responses obtained by these two interviewers are shown separately in Table IV.

The encouraging feature shown by the data in Table IV is that a refusal on the earlier survey does not mean that refusal will be automatically encountered on the second survey. Indeed, the fourth interviewer managed to persuade five out of six people who had refused to co-operate earlier to take part in the pilot survey, although two of them refused to answer the important questions. On the basis of such small numbers as those in Table IV, it cannot even be established that the response from people who refuse on the

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[1] This is not altogether clear from Table III, but the three refusals during the interview where it had not been ascertained in the B.M.R.B. survey whether the informant was self-employed or not, turned out to be self-employed according to information collected in the pilot. Thus, no less than 6 out of 7 refusals during the interview were in fact self-employed.

TABLE IV

Response Rate on B.M.R.B. and Pilot Survey
(Primary Income Units)[1]

Result of Pilot Survey	*Result of B.M.R.B. survey*									
	Fourth Interviewer			*Fifth Interviewer*			*All interviewers*			*Total*
	Success	*Failure*	*Non-contact*	*Success*	*Failure*	*Non-contact*	*Success*	*Failure*	*Non-contact*	
Complete success	16	3	—	8	—	1	41	3	1	45
Incomplete success	3	—	—	—	—	1	10	—	1	11
Refusal:										
during interview	1	2	—	—	—	1	4	2	1	7
outright refusal	1	1	—	6	4	—	14	5	—	19
too old or ill	2	—	—	1	—	—	6	—	—	6
interviewing before	2	—	—	6	—	—	16	—	—	16
Non-contact	—	—	1	2	—	—	6	—	1	7
Total	25	6	1	23	4	3	97	10	4	111

[1] See footnote 2 to Table III.

earlier survey is likely to be any lower than from people who previously co-operated. This is an important result, but it would be rather surprising if response did not in fact tend to be lower for prior refusals than prior successes in a full-scale survey.

Summary and conclusions

The sampling method tested was clearly effective in oversampling particular categories, although in a full-scale survey the amount of oversampling would be restricted by the size of the earlier survey(s) used as a quasi sampling frame. The disadvantage of the scheme is the higher rate of non-response incurred as a result of calling a second time on people who have already been interviewed a few months previously on another survey; the pilot survey indicates that an extra 10 to 15 per cent may refuse for this reason. To some extent, this conclusion is corroborated by the results of a re-interview savings survey carried out by the Institute in 1954.[1] This re-interview survey differed from the pilot survey in two fundamental respects; firstly that only people who were *successfully* interviewed on the first survey were included in the second survey, and secondly, that the previous survey was itself on income and savings so that people knew what to expect the second time. About 15 per cent of the people successfully recontacted in the re-interview survey refused to co-operate a second time, and it was clear that well over half of these refused because of the impact made by the earlier survey. The results of the pilot survey and the re-interview are, therefore, quite consistent with each other in this respect.

Other reasons besides the previous survey for the low response rate obtained in the pilot were the deliberate oversampling of less co-operative categories and the poor fieldwork of one of the five interviewers. Even with the highest standard of interviewing, however, it seems unlikely that with this type of sample and sampling method a crude response rate of more than about two-thirds would ever be achieved in a proper savings survey. One important result of the pilot is to show that people who refuse on the earlier survey do not necessarily refuse on the second and different type of survey; unlike a conventional reinterview survey, therefore, a low response on the earlier survey does not materially affect the quality of the second survey.

In conclusion, it may be observed that it is not only the level of response itself which should be taken into account in judging the quality of any survey. A low response rate may not introduce much bias into the results provided that response is not strongly associated with the variables under consideration. Unfortunately, there seems to be such an association for a survey of incomes and savings but to some extent it may be possible to offset the bias by taking response into account in weighting the observations. Thus, if a low response is obtained from the self-employed, those who were actually interviewed can be given proportionately greater weight in the total sample; nevertheless, it is still impossible by this method to overcome the difficulty that the self-employed who co-operate may not themselves be a random sample of self-employed in general.

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[1] See P. Vandome, 'Aspects of the Dynamics of Consumer Behaviour', BULLETIN, February, 1958, pp. 67–75.

Despite the low response obtained in a pilot, a sample drawn along these lines seems preferable to a completely fresh sample drawn from the electoral register, for example, without any oversampling. The reason for this is the highly skewed distribution of so many economic variables among the population. One way or another, some method has to be devised of greatly oversampling the top one or two per cent of the community in whose hands so much of income, savings and wealth are concentrated.

NUTRITION AT DIFFERENT INCOME LEVELS

By T. SCHULZ

1. *A 'Human Needs' Diet*

During the spring and summer of 1959, retail prices in general showed little variation, except in the cases of seasonal foods. This was also found to be true as regards the very restricted group of foods comprised by the 'human needs' dietaries of our bi-annual surveys of the cost of inexpensive nutrition, the total figure of which for October was very much the same as it had been six months earlier.

In April 1959, the weekly cost for a family consisting of husband, wife, and three children of school age, was 77s., in London and towns in the southern Midlands.* In October, the identical diet cost even slightly less, owing to a fall in the prices of potatoes and eggs. Our figure in Table I for October shows nevertheless a total cost of 77s. 1d., which we think is more

TABLE I

Autumn 1959 'Human Needs' Diet for a Family with 3 Children
(Per Week)

	Quantity	*Price per Unit*[1]	*Cost*
		s. d.	s. d.
Meat	4 lb	2 4	9 4
Bacon	1 lb	2 6	2 6
Herrings	1 lb 8 oz.	1 4	2 0
Eggs	12 eggs	2½	2 6
Cheese	1 lb 10 oz.	3 2	5 1¼
Fresh Milk	14 pt.	8½	9 11
Skimmed Cond. Milk	7½ pt.[2]	11	3 8
Margarine	2 lb 8 oz.	1 6	3 9
Dripping	1 lb	1 4	1 4
Bread	19 lb 4 oz,	11½	10 6½
Flour	3 lb	1 7	1 7
Rolled Oats	2 lb 8 oz.	10	2 1
Macaroni	8 oz.	1 0	6
Other Cereals[3]	1 lb 4 oz.	10	1 0½
Dried Legumes[4]	2 lb 8 oz.	1 1¼	2 9
Sugar	2 lb 8 oz.	7½[5]	1 6¾
Jam or Syrup	8 oz.	1 2	7
Potatoes	17 lb	3¾	5 3½
Onions	1 lb	6	6
Other Root Vegetables	7 lb	4	2 4
Cabbage	3 lb 8 oz.	6	1 9
Cooking Apples	2 lb	6	1 0
Tea	8 oz.	4 8	2 4
Other Foods and Condiments[6] ...	—	3 1½	3 1½
School Milk	5 pt.	free	—
Total			77 1

[1] The price unit is, for eggs, one egg, for fresh milk, one pint; for skimmed condensed milk, a tin supplying the equivalent of 1⅞ pt. of fresh skimmed milk and approximately 5 oz. of sugar, for bread, a 1¾ lb loaf; for flour, a 3 lb bag; for all other foods, a lb.

[2] Fresh milk equivalent

[3] Rice, semolina, barley, etc.

[4] Mainly dried peas and beans.

[5] Bought in 2 lb. packets.

[6] Including 4 oz. of cocoa.

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* T. Schulz, *Inexpensive Nutrition Before and After the War.* BULLETIN, Vol. 21, No. 2.

realistic than would have been the lower figure, related, as it was, to the severely restricted allowance of potatoes in April, which was below what might be considered a normal average consumption for a family of the type postulated in these surveys. In the spring of 1959, potatoes were exceptionally scarce and dear, which implied a reduction in their marginal consumption and, in an inexpensive diet, their partial replacement by cheaper foods. By October, the new harvest was on the market and supplies were ample. Consequently the price—4½d. a lb. in April—was down to 3¾d. and even less.[1] Even at this price potatoes were dearer in terms of nutrients than flour, bread, and a number of other cereal foods. Few housewives however are likely to be able to assess these relative values; moreover, the replacement of potatoes on a substantial scale by cereal foods runs counter to the dietary habits of most British working-class families. Such a replacement may in fact not even be very desirable in a 'human needs' diet, before at least the end of December, since until then potatoes eaten in substantial quantities represent a useful additional source of vitamin C in a restricted dietary; by the end of December potatoes harvested in the autumn have lost most of their content of vitamin C, and the little that still is retained may easily be eliminated in cooking and serving. We therefore raised in the October dietary the April allowance of potatoes, of 10 lb. 8 oz., to 17 lb., and correspondingly reduced the allowance of cereals other than bread and flour, from 5 lb. 4 oz. to 4 lb. 4 oz. We also replaced 8 oz. of syrup by 1 lb. of apples. The number of eggs in both dietaries is the same, *viz.*, a dozen per week; their cost in inexpensive shops was 3s. in April and 2s. 6d. in October.

2. '*Human Needs*' *and Average Consumption*

Already in an earlier paper we were able to provide some answer to the often asked question, how near to actual average family diets—or how far removed from them—are the 'human needs' dietaries considered in this series of surveys.[2] We there dealt with this question in relation to patterns of food expenditure. We made use of data obtained from a survey into household expenditure by the Ministry of Labour,[3] which showed that the average family with three dependent children and catering on an income that approximately corresponded to the average industrial earnings of adult male workers, spent on the basic foods approximately the same amount as computed by us as the cost of a contemporaneous 'human needs' diet, but over four times as much—27 per cent of the total outlay on food as compared with the 8½ per cent of the cost of the 'human needs' diet—on supplementary foods. Of these 27 per cent almost half went to purchase cake, biscuits, sweets, chocolate, and ices; a fifth went to purchase meals away from home, and the remainder to purchase unspecified foods and condiments. These figures apply to 1953–54, in which year the Ministry of Labour carried through the comprehensive survey which made these comparisons possible; but it is unlikely that the expenditure patterns that emerged from this very large scale survey have since undergone any fundamental alteration.

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[1] In many shops they sold at between 3d. and 3½d. a lb.

[2] T. Schulz, *The Problem of Adequate Nutrition*. BULLETIN, Vol. 20, No. 3.

[3] Ministry of Labour and National Service, *Report of an Enquiry into Household Expenditure in 1953–54*. H.M.S.O.

Now we are in a position to compare quantitative data, thanks to the most recent—1957—detailed survey of food consumption by the National Food Survey Committee.[1] In comparing expenditure patterns it was obviously advisable to synchronize all the patterns investigated, and we thus set the figures of actual average household expenditure in 1953–54, published by the Ministry of Labour in 1957, against the cost figures of a ' human needs ' dietary which we computed in the autumn of 1953. There is, however, no need for us to turn back several years in order to obtain a comparable juxtaposition of patterns of food consumption, since dietary habits do not change under normal conditions within a few years. In the following we shall therefore show side by side data based on the national food survey for 1957 and the quantities given in our ' human needs ' dietary for April 1959. The temporarily restricted allowance of potatoes in that dietary—reflecting the general shortage of potatoes—will help to underline the degree of adaptability presupposed, at least on occasion, in these ' human needs ' dietaries.

Table II shows quantities of food per head per week. The first column shows the amounts allowed in the ' human needs ' dietary for April 1959; the quantities that were actually consumed by families that co-operated in the 1957 national food survey are set out in adjacent columns in the form of indices related to each respective item in the ' human needs ' dietary, to which is given the value of 100. The first column of these indices represents the average consumption of all the 8,931 families that took part in the national food survey. The final two columns of indices show the consumption by families consisting of husband, wife, and three children, the first the consumption by all the families with three children of school age and under (361 families) and the second that by families with three children of school age only (113 families). Much larger quantities than suggested in the ' human needs ' dietary were purchased by all the families not only of potatoes but also sugar, eggs, and, above all, fresh fruit; much smaller quantities, on the other hand, of cheese, cereals, dried legumes, root vegetables other than potatoes, and cocoa and related food drinks. The families with three children at school also consumed significantly less milk.

Detailed figures of the consumption of certain foods are not available for all the sub-groups of the food survey sample; but the data given are sufficiently determinate to outline general consumption patterns. Those, however, in Table II are incomplete and understate the actual consumption for certain important food groups. Thus carcase meat, which represents 80 per cent of the total quantity of meat in the ' human needs ' dietary, only constituted about one half of the actual meat consumption of the families in 1957. Again, the actual consumption of pulses by these families was not limited to

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[1] Ministry of Agriculture, Fisheries, and Food, *Domestic Food Consumption and Expenditure, 1957*. Annual Report of the National Food Survey Committee. H.M.S.O.

TABLE II

Food Consumption per Person per Week

	' Human Needs ' Allowances Spring 1959	*Average Consumption 1957*		
		All Families	*Husband, Wife and 3 Children of*	
			School Age and Under	*School Age Only*
	Quantity	Index: ' Human Needs ' Allowance = 100		
1. All Milk[1]	5.3 pt.	96	98	87
2. Cheese	5.2 oz.	56	41	42
3. Carcase Meat	12.8 oz.	147	96	99
4. Bacon...	3.2 oz.	146	102	?
5. Fish	4.8 oz.	124[2]	85[2]	92[2]
6. Eggs	2.4 eggs	183[3]	152[3]	167[3]
7. All Fats	11.2 oz.	107	89	97
8. Sugar	8.0 oz.	221	195	?
9. Jam, Syrup, Honey, etc. ...	3.2 oz.	112	100	?
10. Bread	61.3 oz.	97[4]	83[4]	91[4]
11. Cake and Biscuits	—			
12. Flour	9.6 oz.	81	60	73
13. Oatmeal and Rolled Oats	8.0 oz.	36[5]	45[5]	?
14. Breakfast Cereals	—			
15. Other Cereals	8.8 oz.	35	32	?
16. Tea	1.6 oz.	176	123	131
17. Cocoa	0.8 oz.	50[6]	41[7]	?
18. Food Drinks	—			
19. Dried Legumes	8.0 oz.	8	?	?
20. Potatoes	33.6 oz.	174	156	163
21. Fresh Fruit and Vegetables (*excl.* potatoes) Total ...	40.0 oz.	114	?	?
Of these:				
Greens	*11.2 oz.*	*142*	*101*	*116*
Onions	*3.2 oz.*	*100*	*?*	*?*
Other Root Vegetables ...	*22.4 oz.*	*24*	*?*	*?*
Fresh Fruit	*3.2 oz.*	*663*	*491*	*503*

[1] Including condensed, evaporated, dried, etc., milk and welfare milk received free at school or at a reduced price at home.

[2] Including fried and tinned fish, shell fish and fish products.

[3] Including about ½ egg home produced or obtained free.

[4] Bread, and Cake and Biscuits, in proportion of aproximately 4:1.

[5] Oatmeal and Breakfast Cereals in proportion of approximately 1:2.

[6] Cocoa and Food drinks in proportions of 1:1.

[7] Cocoa and Food drinks in proportion of approximately 2:1.

the purchased two-thirds of an ounce per head per week of dried legumes, for they bought in addition about 5 oz. of tinned peas and beans. These detailed figures will be found in Table III, which further shows the consumption of milk and cheese in terms of fresh milk.

It will be seen that in terms of fresh milk, all the families with three children under 15 years old, consumed only 82 per cent, and the families with three children all of school age, only 75 per cent of the total amount suggested per head in the ' human needs ' dietary. The figures of nutritional intake by the families all of whose children were of school age, suggested that their average diets were deficient in protein and possibly also calcium.[1]

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[1] The figures given are, in relation to standard requirements, 91 per cent for calcium and 85 per cent for protein. Since, however, ' in calculating the allowances for application

TABLE III

Consumption of Specific Foods per Person per Week

	'Human Needs' Allowance Spring 1959	*Average Consumption 1957*		
			Husband, Wife and 3 Children of	
		All Families	*School Age and Under*	*School Age Only*
All Meat Products:				
Total	16.0 oz.	35.4 oz.	24.8 oz.	26.3 oz.
of this:				
Carcase Meat	*80.0%*	*53.1%*	*49.6%*	*48.3%*
Uncooked Bacon and Ham ...	*20.0%*	*14.4%*	*14.5%*	*51.7%*
Bones bought as such	—	*1.1%*	*35.9%*	
Other Meat Products ...	—	*31.4%*		
All Milk[1] and Cheese in terms of Fresh Milk:				
Total	7.3 pt.	6.2 pt.	6.0 pt.	5.5 pt.
of this:				
All Milk	*72.6%*	*82.2%*	*86.1%*	*84.2%*
Cheese	*27.4%*	*17.8%*	*13.9%*	*15.8%*
Fresh Root Vegetables (excl. potatoes), Dried Legumes, Tinned Vegetables and Vegetable Products				
Total	33.6 oz.	16.1 oz.	13.4 oz.	13.5 oz.
of this:				
Fresh Root Vegetables ...	*76.2%*	*52.7%*	—	—
Dried Legumes	*23.8%*	*3.9%*	—	—
Tinned Peas and Beans ...	—	*31.5%*	—	—
Other	—	*11.9%*	—	—

[1] Including welfare and school milk, and condensed evaporated and dried milk.

Moreover, even when the average figures of protein and calcium are satisfactory, diets of families with young children which show a high consumption of sugar and of meat and a relatively low consumption of milk, could entail a maldistribution of nutrients amongst the members of the family, in so far as the relatively largest proportion of sugar is consumed by the mother and the children and the relatively largest proportion of meat and cheese—next to milk and bread, important sources of protein and calcium—by the husband.

3. *Food and Income*

The national food survey represents a sample of the food consumption by families of all social and economic levels. In 1957, the weekly incomes of the heads of households that co-operated in the survey, ranged from over £30 a week to under £7. This wide overall spread applies to the whole sample as well as to the sub-groups of families with three dependent children which we discussed so far. But more specific—even though not quite such detailed—

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to the Survey data . . . a further arbitrary adjustment of 10 per cent was applied to allow for plate and other wastage or spoilage and for food bought for consumption and fed to domestic pets ' (*op. cit.*, p. 22) in addition to the allowances made for inedible wastage, such as vegetable parings and meat bones, the actual *average* intake of nutrients of the families in this group may have been under-estimated in the survey data. This is suggested by the average Survey figure of calorific intake by the families with three children at school, of only 96 per cent of the standard requirements. In the general pattern of food consumption by these families, an *average* 4 per cent calorific deficiency would clearly have been not a necessity but the result of a collective choice by the group as a whole—which is highly improbable.

TABLE IV

Consumption of Main Foods in 1957 by Families with 3 Children of School Age and Uuder in Different Income Groups

Per Person per Week

	Group B[1]	*Group A*[2]	*Group C & D*[3]
	Quantity	*Index: B= 100*	
1. All Milk	5.3 pt.	117	90
2. Cheese	2.2 oz.	102	91
3. All Meat	24.5 oz.	114	98
4. Fish	4.6 oz.	100	76
5. Eggs	3.8 eggs	111	89
6. Butter	3.9 oz.	139	79
7. Cake and Biscuits	9.2 oz.	99	93
8. Breakfast Cereals	2.3 oz.	117	103
9. Fresh Fruit	15.7 oz.	164	77
10. Tea	2.0 oz.	87	98
11. Cocoa and Food Drinks	0.3 oz.	220	87
12. Bread	41.1 oz.	90	107
13. Flour	5.8 oz.	92	100
14. Other Cereals (*excl.* No. 8)	4.1 oz.	109	93
15. Potatoes	55.5 oz.	74	96
16. Fresh Greens...	11.2 oz.	136	87
17. Other Vegetables (*incl.* tinned, etc.) ...	13.3 oz.	111	102
18. Sugar	16.9 oz.	94	83
19. Fats (*excl.* butter)	6.4 oz.	84	99
Total Food Expenditure per Person per Week (1957)	21s. 9d.	113	88

[1] 164 families: weekly income of head of household between £10 10s. and £18.

[2] 16 families: weekly income of head of household over £30; and 34 families: weekly income of head of household between £18 and £30.

[3] 133 families: weekly income of head of household between £7 and £10 10s., and 14 families: weekly income of head of household less than £7.

data are also available. We have made use of these in Table IV. We there show consumption data for families with 3 children of school age and under in different income groups. Group B represents 164 families whose head had a weekly income of between £10 10s. and £18; group A represents 16 families whose head had per week over £30 and 34 families whose head had between £18 and £30. The figures in the combined group C and D_1 refer to 133 families whose head had a weekly income of between £7 and £10 10s. and 14 families whose main income recipient[1] had less than £7. The Ministry of Labour figures of average earnings in industry in 1957 suggest that the incomes covered by group B represent a range of from about 80 per cent to some 140 per cent of the average gross earnings of a male adult worker.[2] For group B we give the actual quantities per head per week. For the two other groups, A, and C and D_1, we give indices which show the respective quantities as percentages of the corresponding quantity consumed by the families in group B.

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[1] In this group, not necessarily the head of the household, since 'this group contained many households in which the head was retired but which had one member or more in normal employment' (*op. cit.*, p. 26).

[2] The Ministry of Labour figures for this group of workers, for a selected week, were 241s. 6d. in April 1957 and 251s. 7d. in October 1957.

We have divided Table IV into two sections, the upper section representing the animal protein and what may be termed ' semi-luxury ' foods and the lower the main cereal and other inexpensive foods. To this there may be one exception. The group ' other vegetables ' (no. 17 in Table IV) includes unspecified amounts of tinned peas, beans, and other vegetables, which in the context of this paper cannot be classed as ' inexpensive.' However this group had to find some place in Table IV, and it also covers cheap dried pulses and root vegetables other than potatoes.

On the whole, the general picture represented by Table IV is as one would have expected it to be: the families with the higher incomes tended to buy more of the animal protein foods and, generally, of the more expensive foods, than the families with the medium incomes, and the families with the lower incomes tended to buy less of these foods. For the families in group A, cocoa, food drinks, and coffee took partly the place of tea, and thus account for the relatively low figure of tea consumption by these families.

It is however noteworthy that the quantity of carcase and processed meats was virtually the same for the families in group B and group C and D_1, although the consumption of the relatively low priced animal protein foods milk and cheese by the families in group C and D_1 was 10 per cent below that by the families in group B. In 1957, the prices of meat—always a ' dear ' food—were rising, while the price of cheese was falling steeply, being by the last quarter of the year about 28 per cent lower than at the beginning of the year. Skimmed condensed milk too was very cheap, but only 0.16 pint fresh milk equivalent of *all* kinds of condensed milk was bought per head per week by the families in group C and D_1. No specific prices paid for meat by families with three dependent children in different income groups can be ascertained from the data of the food survey; but expenditure data on meat are available for all the families in the different groups, which allow us to compute the relative prices relating to each group. If we apply the index figure of 100 to the unit price paid for all meat by the families in group B, we find for group A a price index of 108, for group C a price index of 96, and for group D_1 a price index of 94. Thus, on the whole, the families in groups C and D_1 do not appear to have bought meat of a quality much inferior to that bought by the families in group B.[1]

The total outlay per head per week on food in 1957 was, by the families with three children of school age and under, in group A, 24s. 7d.; in group B, 21s. 9d., and in the combined group C and D_1, 19s. 3d. The average cost of a ' human needs ' diet in 1957 was, per head per week, 14s. 1d.

4. *Conclusion*

The sample analysed by the National Food Survey Committee throws an interesting light on the food habits of British families. It confirms the observation that generally meat is considered not only a valuable but an indispensable item of the daily diet, even by families with relatively low incomes. In 1957, even families with less than £7 a week—families with an earner, without an earner, and old age pensioners[1]—bought 2 lb. of meat and meat products per head per week, spending on it about 25 per cent of their total outlay on food, which for none of these three low income groups fell below 25s. per head per week. On the other hand, there was no indication of any significant rise in the purchase of cheese by any of the Survey income groups—high or low—in spite of the sharp decline in the price of cheese in 1957. Compared with the averages ascertained by the National Food Survey Committee for 1956, the consumption in 1957 of meat showed no change and that of cheese suggested a rise by 1 per cent, which, in a survey of this kind, is not significant.

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[1] The price index for meat for the families in group D_2—representing families without an earner—is 92, and of old age pensioners, 91. Both these groups bought per head per week just over 2 lb.

This rigidity of dietary habits is, of course, a well known fact. At a time of relative economic affluence it is made possible without a serious risk of deleterious effects on nutrition, because incomes in general are sufficient to allow people to purchase the dietary items they fancy most, without endangering their intake of essential nutrients. At times certain foods are in short supply; but with enough purchasing power available they can usually be imported from elsewhere. Nevertheless, even with generally high incomes there are still some families who risk malnutrition—sometimes only malnutrition of some of their members—because the disposable incomes are insufficient to supply them with a complete diet of their choice. Families of this kind can be helped to attain a better nutritional intake by means of a well balanced 'human needs' dietary; for without necessarily being adopted in full, such a dietary can indicate how to correct a deficient nutritional intake within the framework of the available income—which, as experience shows, is not in all instances an exceptionally low one, but sometimes only one not laid out to the best advantage.

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[1] The average sizes of the families with less than £7 per week were: families with an earner, 2.68 persons, of which 0.25 were adolescents and 0.56 children; families without an earner, but excluding families of old age pensioners, 1.90 persons, of which 0.03 were adolescents and 0.28 children; families of old age pensioners, 1.47 persons, of which 0.02 were children.